



Ground Water Resources Commission Meeting

Wednesday, December 2, 2009

Mr. John Adams

DNR Office of Conservation

Adoption of Minutes

September 16, 2009



Mr. John Lovelace

USGS, Louisiana Water Science Center

Southern Hills Aquifer System Outlook and Sustainability



THE SOUTHERN HILLS AQUIFER SYSTEM

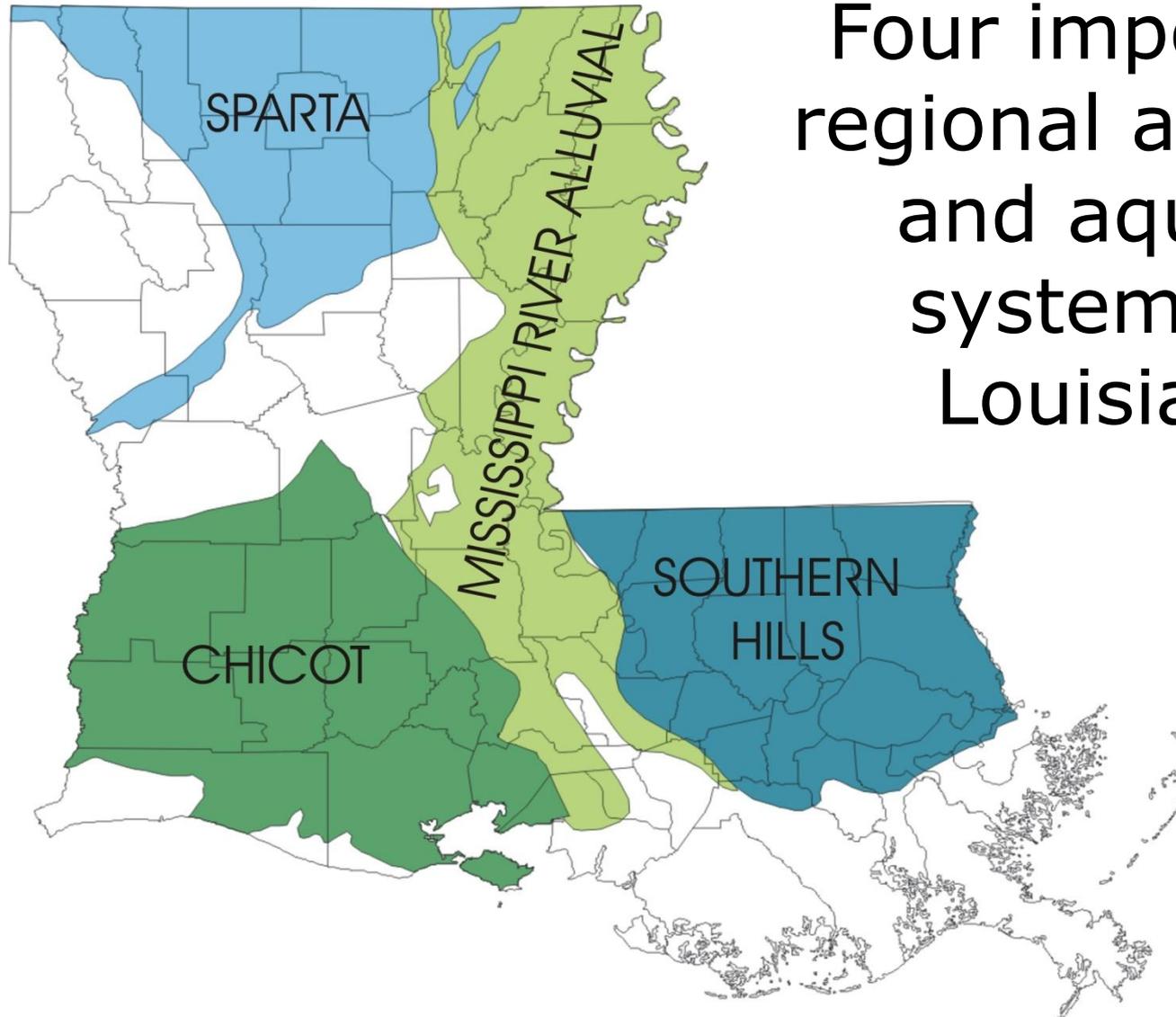
prepared for the
Louisiana Groundwater Resources
Commission

by the
United States Geological Survey

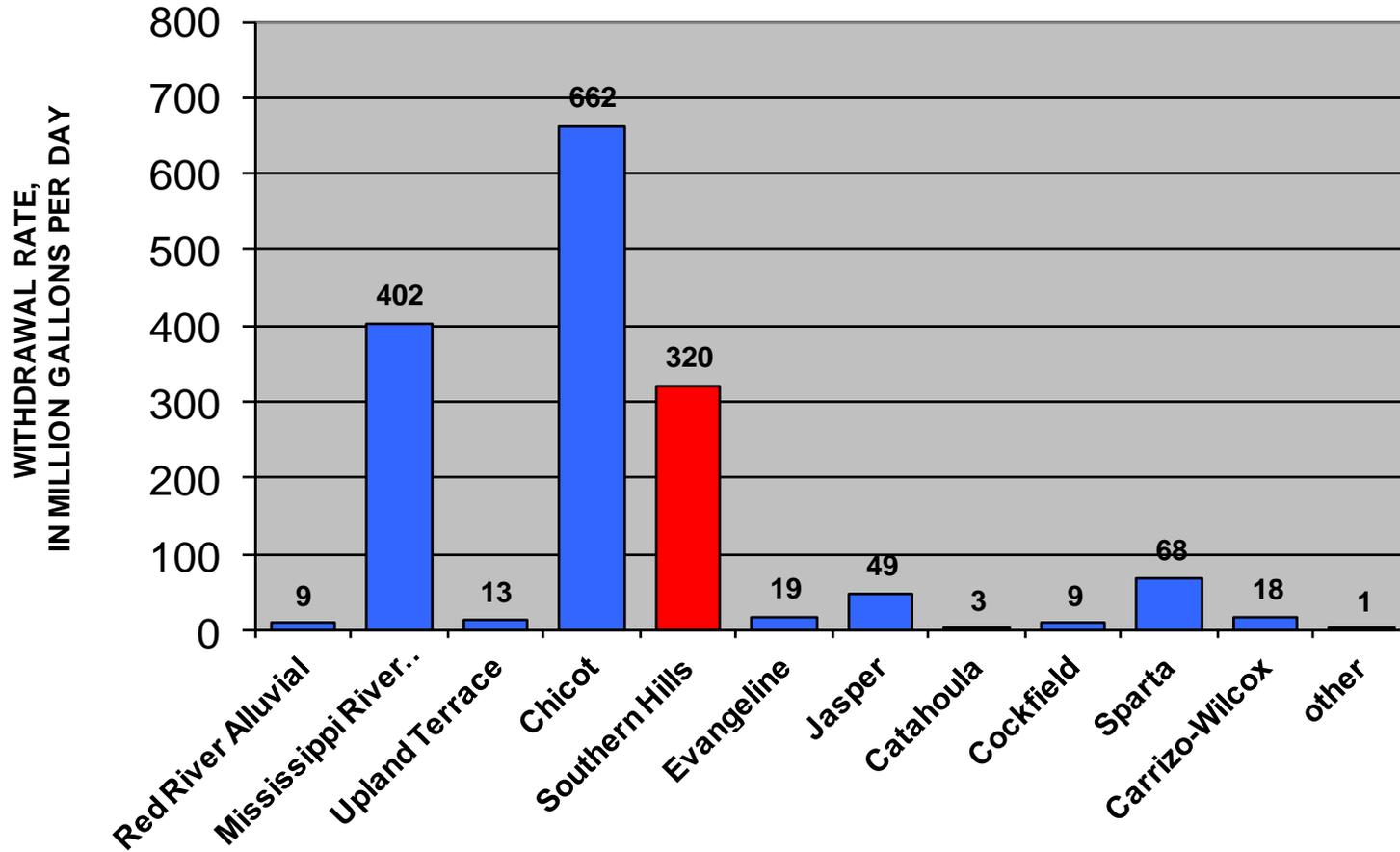
December 2, 2009

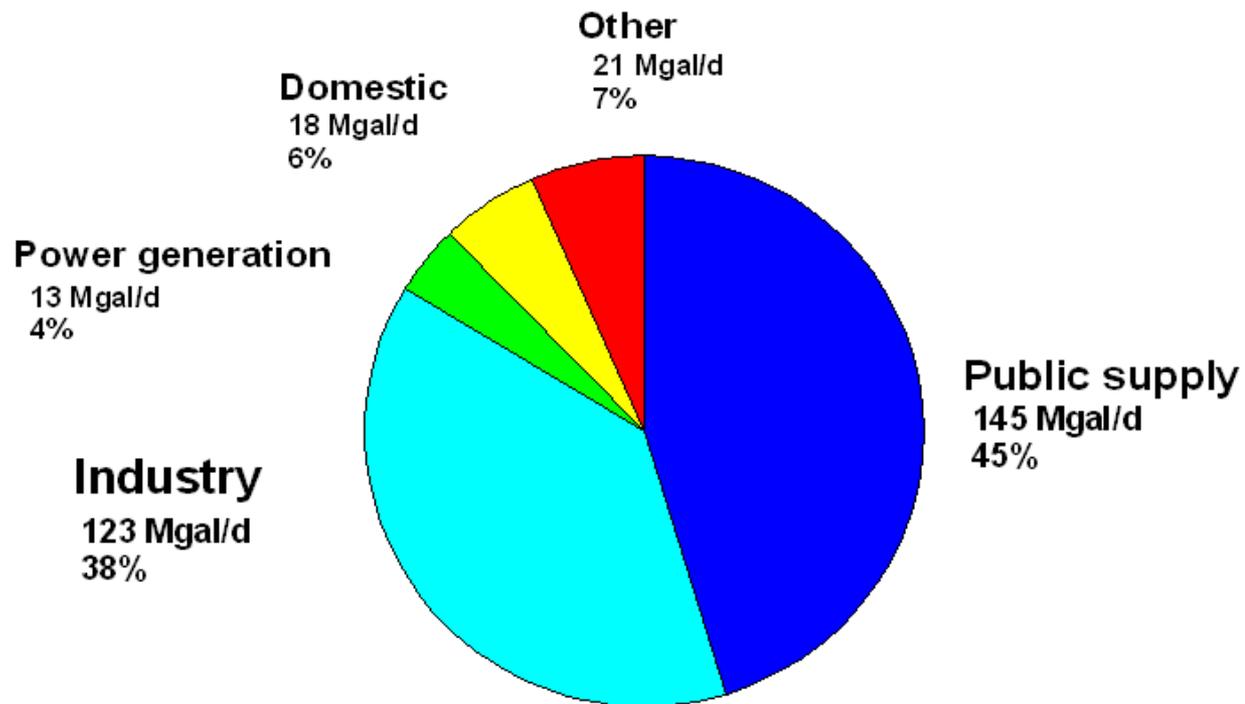


Four important regional aquifers and aquifer systems in Louisiana

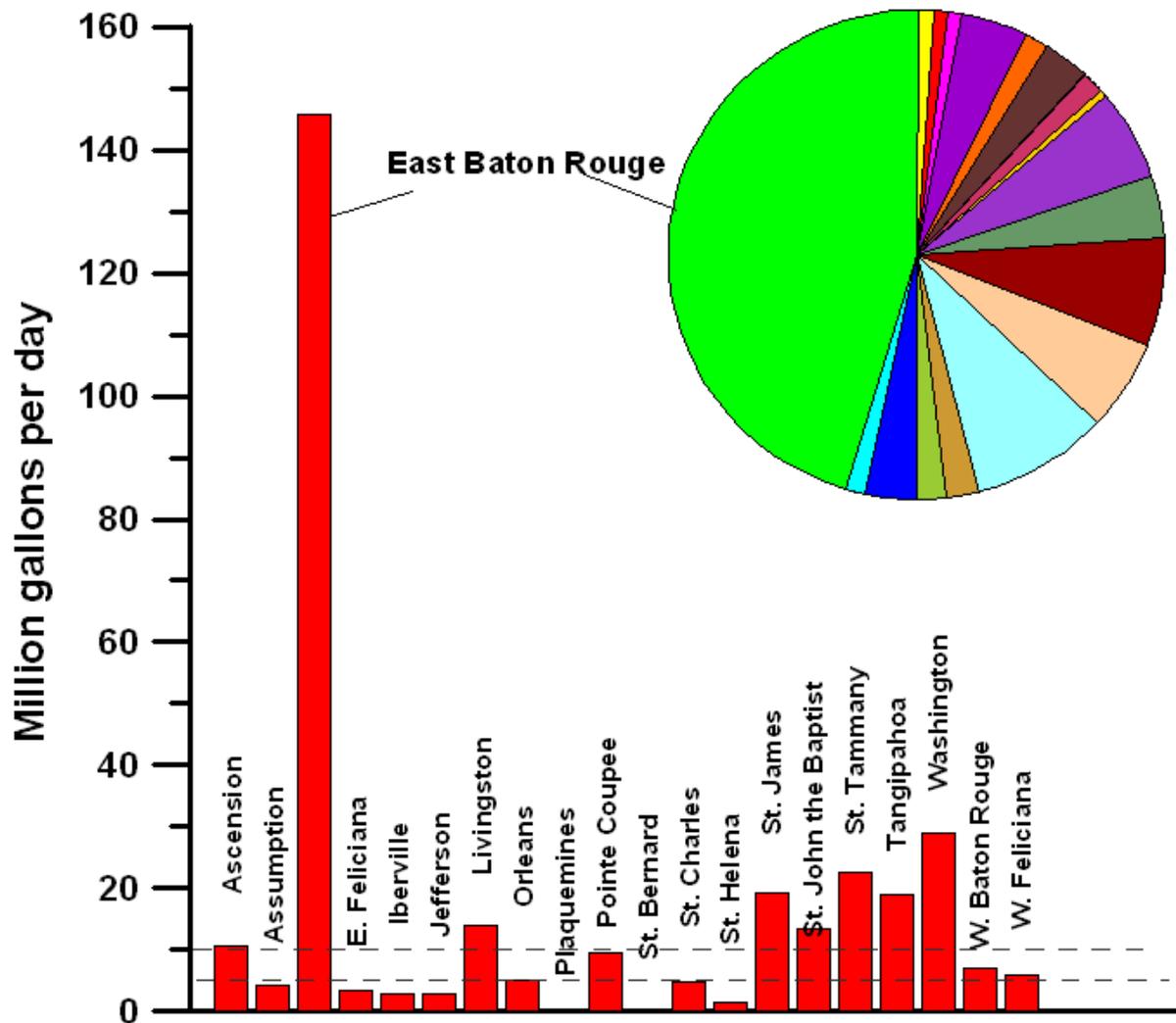


PUMPAGE BY MAJOR AQUIFER OR AQUIFER SYSTEM, 2005





USE OF WATER FROM THE SOUTHERN HILLS AQUIFER SYSTEM,
2005

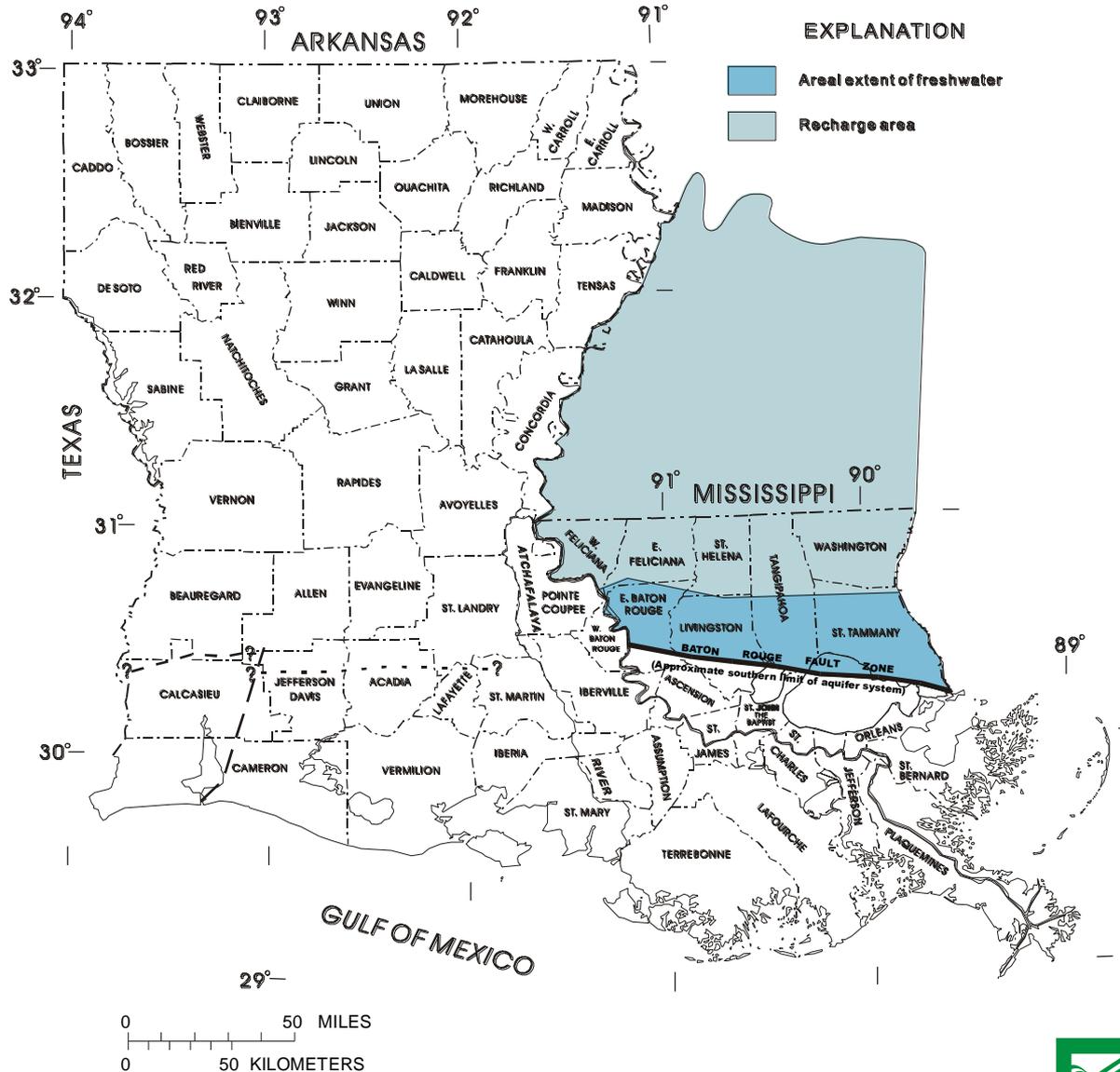


Withdrawal from the Southern Hills Aquifer System, 2005
 Total 320.41 Mgal/d

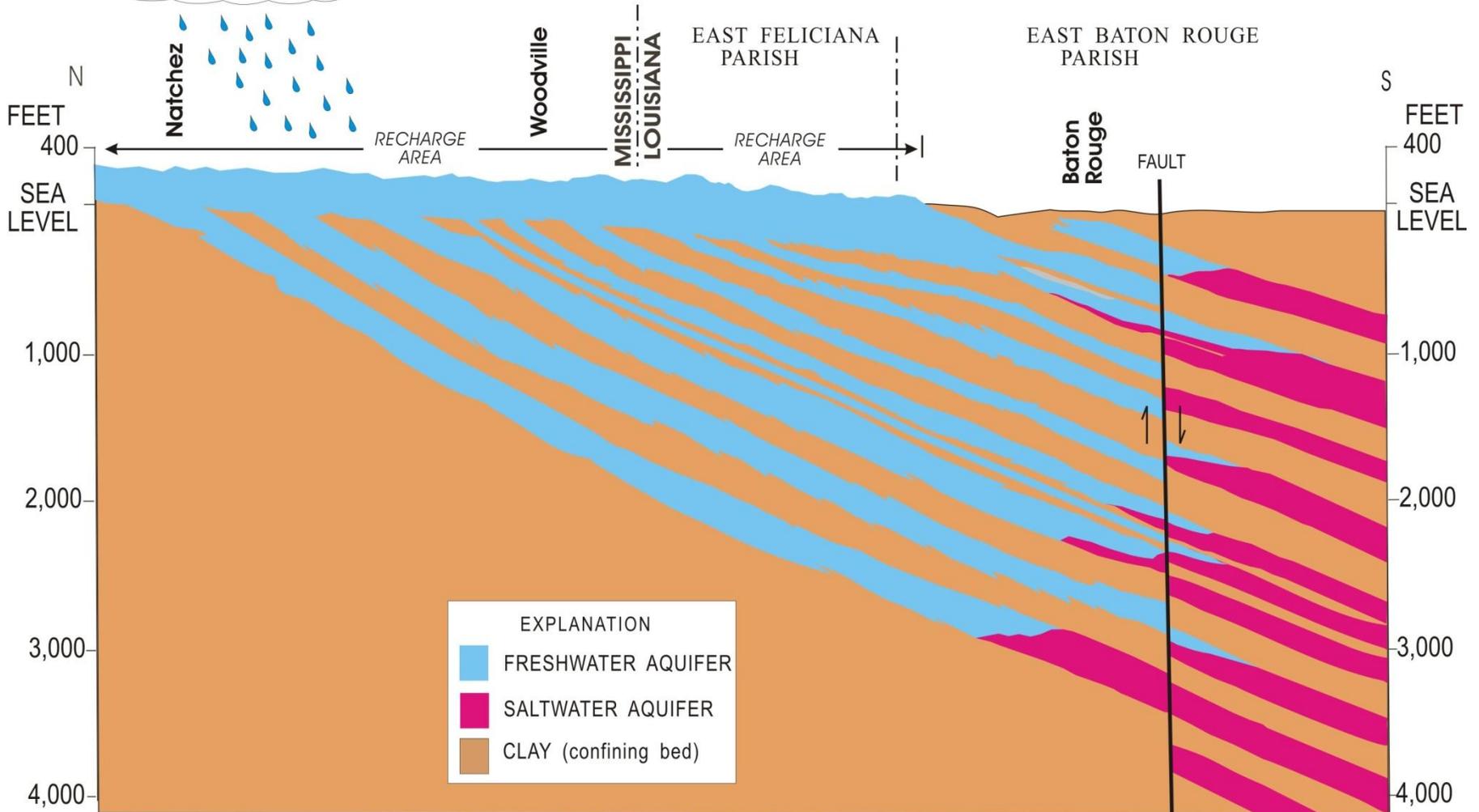
WITHDRAWALS, SALTWATER, AND FAULTING

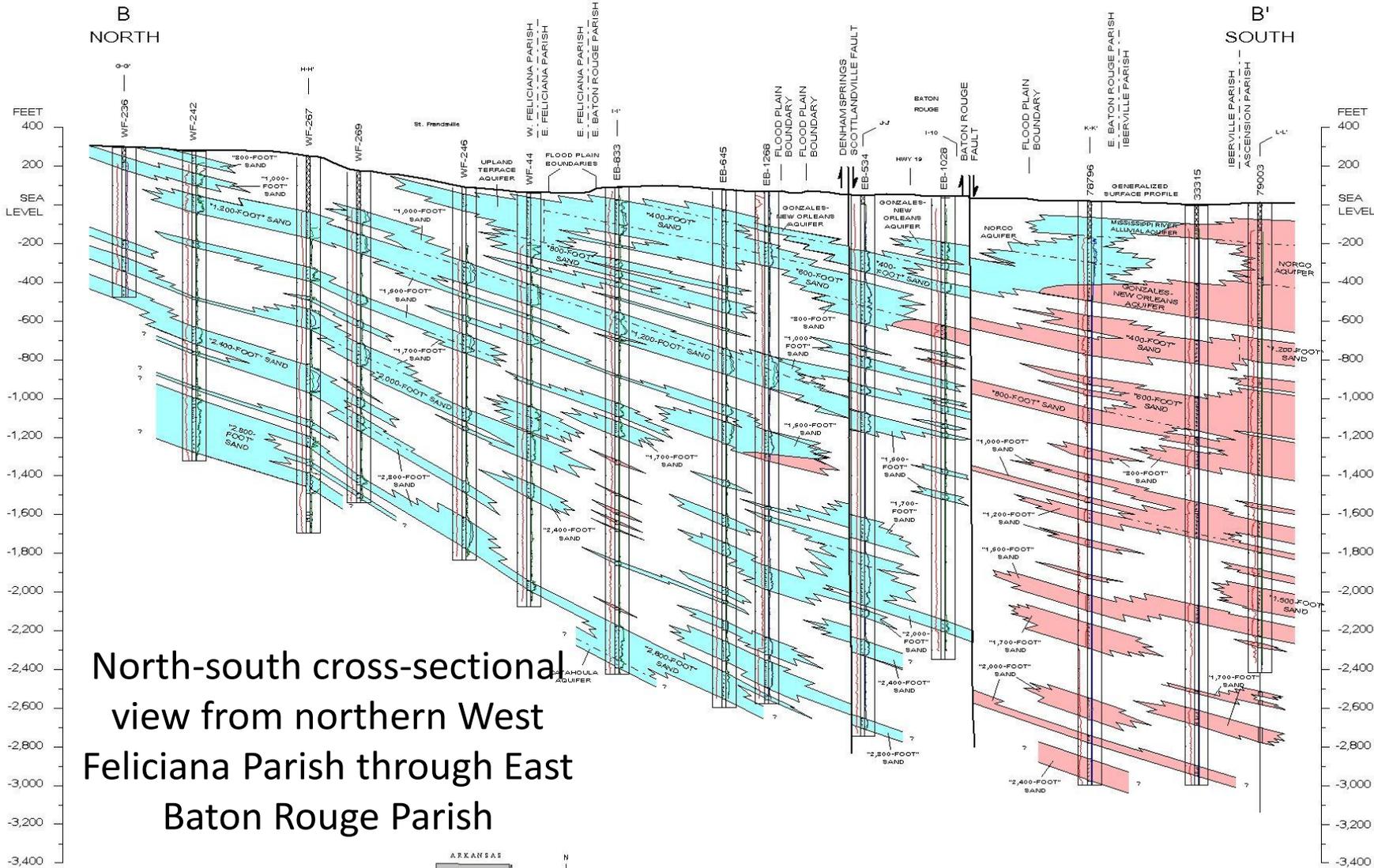
- Large quantities of fresh ground water are located north of the Baton Rouge fault. This freshwater generally contains less than 10 milligrams per liter chloride.
- The Baton Rouge fault is an east-west trending growth fault that extends through Baton Rouge and across southeastern Louisiana. The fault is a leaky barrier to groundwater flow.
- Aquifers south of the fault generally contain saltwater and are primarily used to supplement surface supplies.
- Prior to development, freshwater flowed southward from recharge areas in Mississippi to the Baton Rouge fault.
- Large withdrawals, mostly at Baton Rouge, have lowered water levels and altered flow patterns in the aquifers creating gradients favorable for the movement of saltwater across the fault into freshwater areas.
- Chloride concentrations are increasing in several wells near the fault in East and West Baton Rouge Parishes, indicating that saltwater encroachment across the fault is occurring in several aquifers.

Southern Hills aquifer system

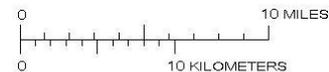


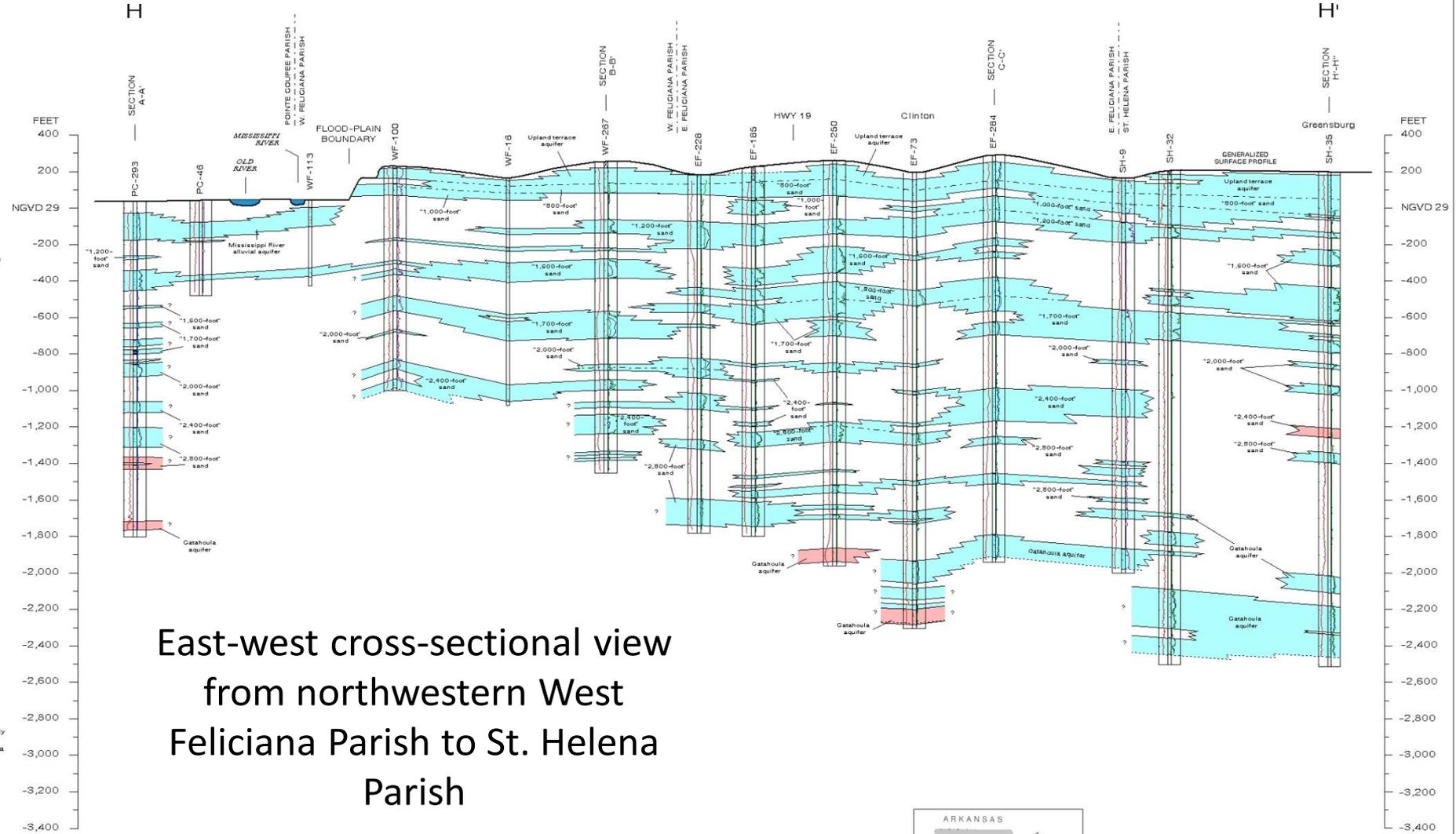
Southern Hills Aquifer System



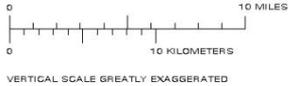


North-south cross-sectional
 view from northern West
 Feliciana Parish through East
 Baton Rouge Parish

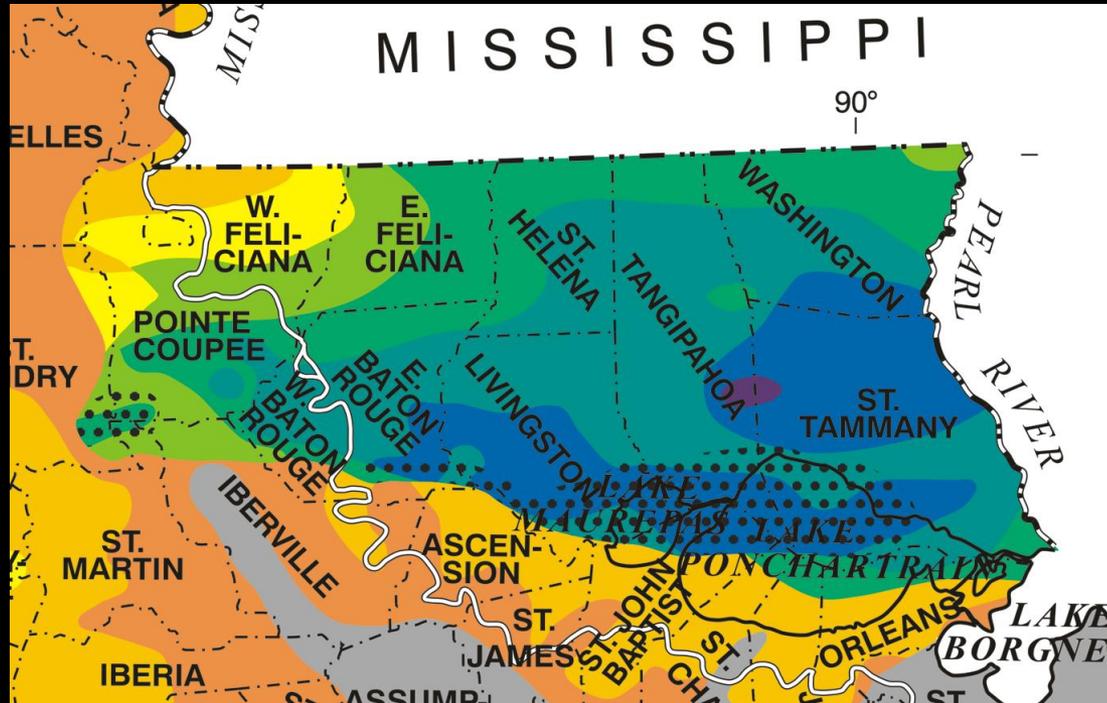




East-west cross-sectional view
from northwestern West
Feliciana Parish to St. Helena
Parish



Base of Freshwater



EXPLANATION

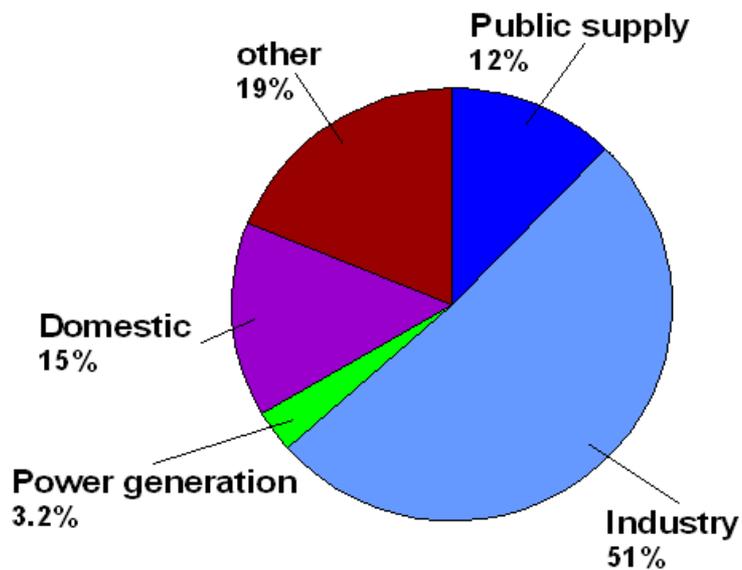


The Southern Hills aquifer system

- The Chicot Equivalent aquifer system
 - Baton Rouge area - shallow, “400-foot”, and “600-foot” sands
 - Florida Parishes - upland terrace and Upper Ponchatoula aquifers
 - New Orleans area - Gramercy, Norco, and Gonzales-New Orleans aquifers; and the “1,200-foot” sand of the New Orleans area

CHICOT EQUIVALENT AQUIFER SYSTEM (SOUTHEASTERN LOUISIANA)

TOTAL WATER USE
107 Mgal/d IN 2005



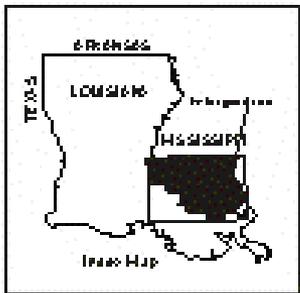
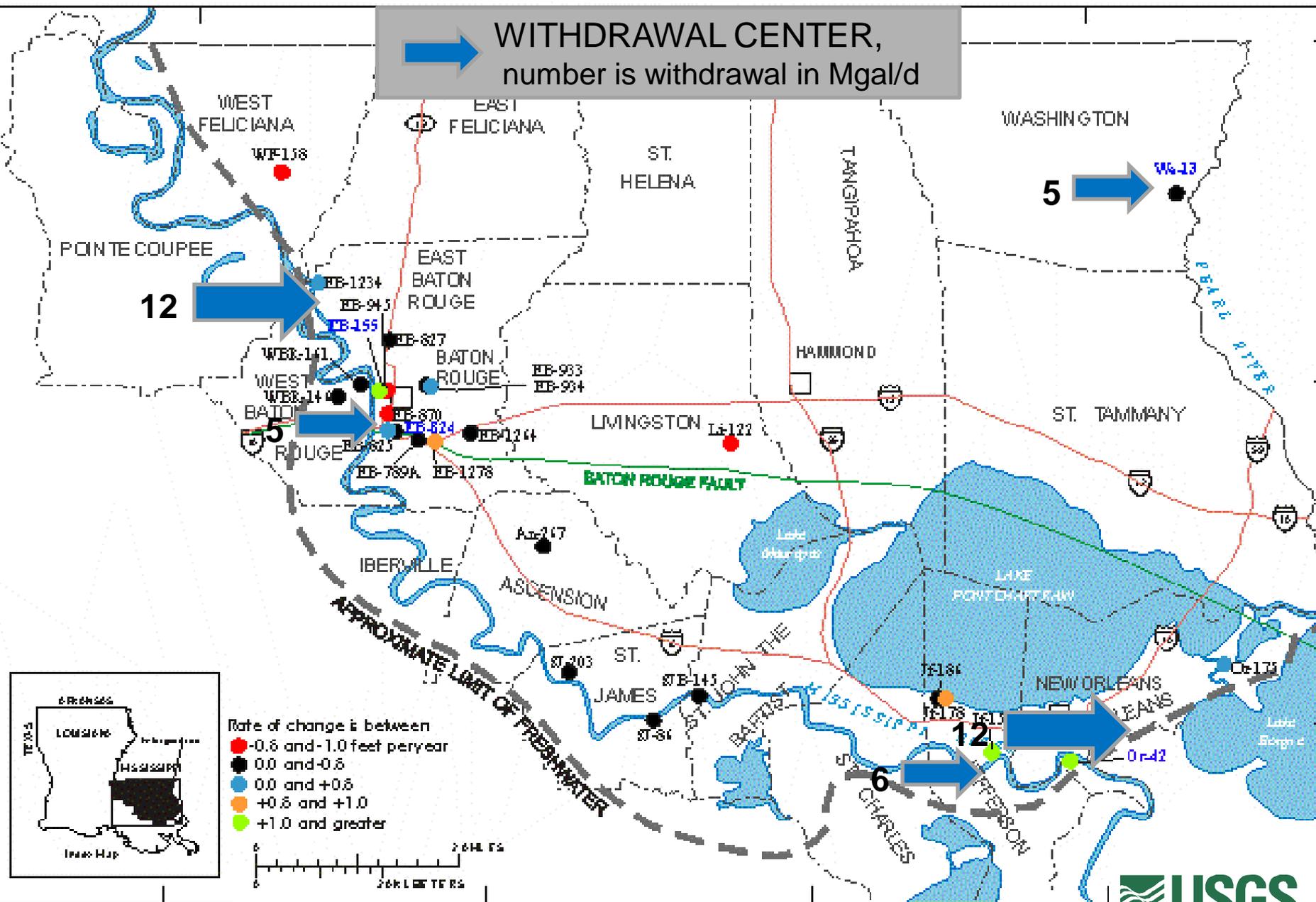
Withdrawals by Parish

Parish	Mgal/d
Ascension	10.65
Assumption	4.19
East Baton Rouge	25.28
East Feliciana	.21
Iberville	1.60
Jefferson	2.74
Livingston	3.31
Orleans	5.04
Plaquemines	.04
Pointe Coupee	1.87
St. Bernard	.03
St. Charles	4.89
St. Helena	.83
St. James	19.30
St. John the Baptist	9.63
St. Tammany	5.99
Tangipahoa	4.22
Washington	7.18
West Baton Rouge	.01
West Feliciana	.02

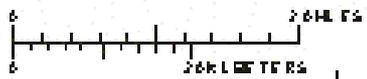
Withdrawals, in million gallons per day (Mgal/d)

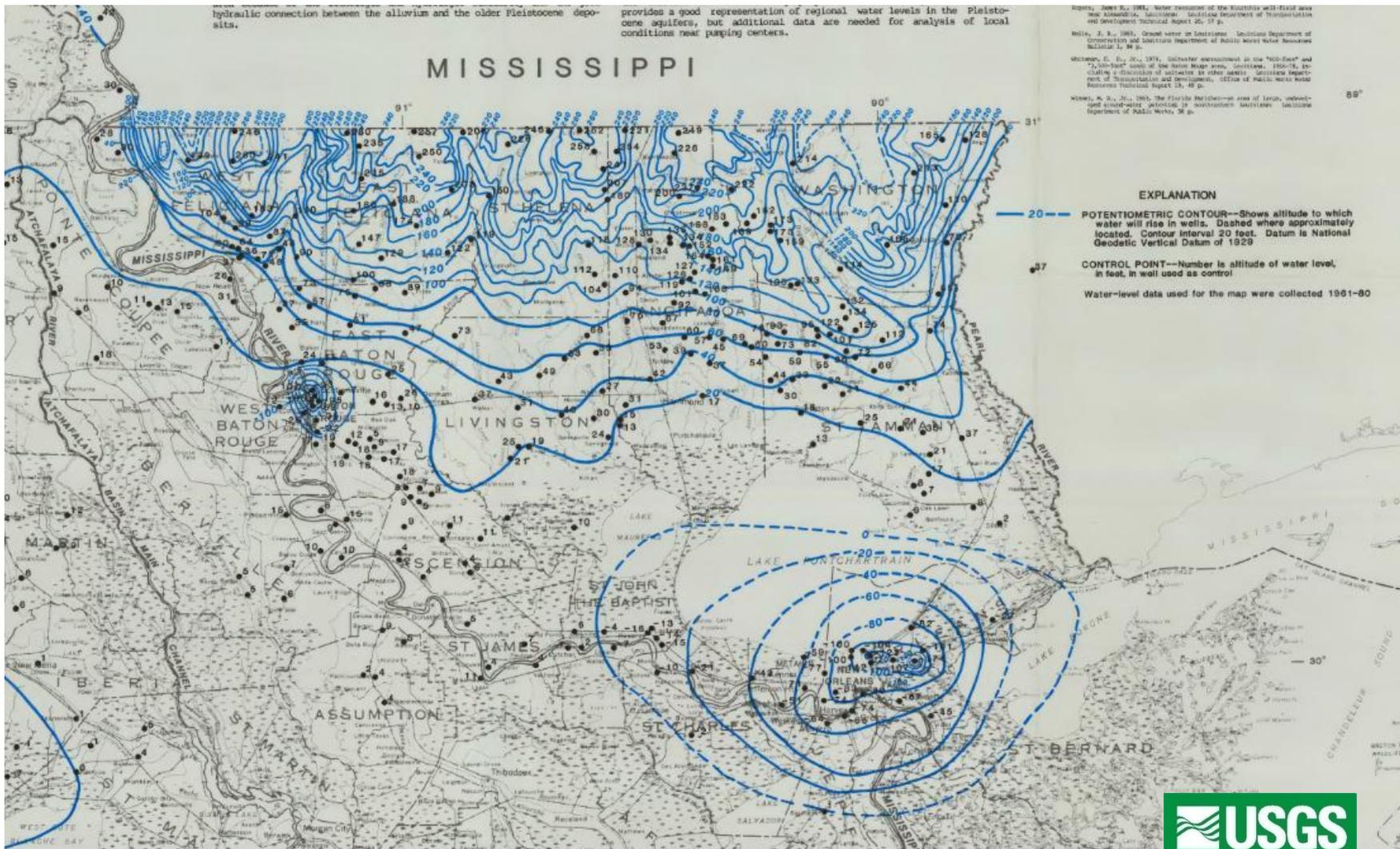
Public supply	13.18
Industry	54.68
Power generation	3.41
Rural domestic	15.61
Livestock	.47
Rice irrigation	.00
General irrigation	1.37
Aquaculture	18.32
TOTAL	107.03

WITHDRAWAL CENTER,
number is withdrawal in Mgal/d



- Rate of change is between
- -0.8 and -1.0 feet per year
 - 0.0 and -0.8
 - 0.0 and +0.8
 - +0.8 and +1.0
 - +1.0 and greater



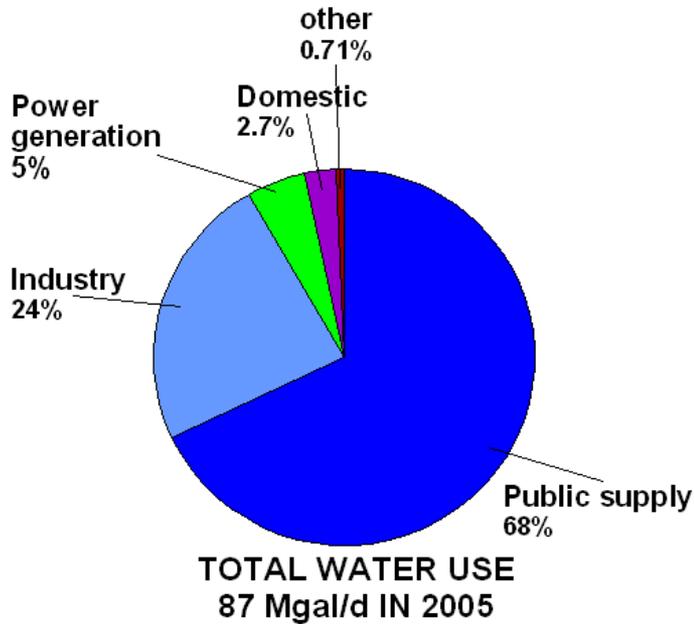


Water levels for 1980 in the Pleistocene aquifers of southern Louisiana. The map was prepared as part of the Western Gulf Coast Regional Aquifer-System Analysis study.

The Southern Hills aquifer system

- The Evangeline Equivalent aquifer system
 - Baton Rouge area - “800-foot,” “1,000-foot,” “1,200-foot,” “1,500-foot,” and “1,700-foot” sands
 - Florida Parishes - Lower Ponchatoula, Big Branch, Kentwood, Abita, Covington, and Slidell aquifers

EVANGELINE EQUIVALENT AQUIFER SYSTEM (SOUTHEASTERN LOUISIANA)



Withdrawals by Parish

Parish	Mgal/d
East Baton Rouge	52.27
East Feliciana	0.37
Livingston	4.79
Pointe Coupee	3.17
St. John the Baptist	3.68
St. Tammany	12.32
Tangipahoa	2.64
Washington	0.25
West Baton Rouge	6.85
West Feliciana	0.76

Withdrawals, in million gallons per day (Mgal/d)

Public supply	59.21
Industry	20.56
Power generation	4.34
Rural domestic	2.36
Livestock	.33
Rice irrigation	.07
General irrigation	.15
Aquaculture	.07
TOTAL	87.09

MAJOR WITHDRAWAL CENTERS IN THE EVANGELINE EQUIVALENT AQUIFER SYSTEM 2003 (1,500- and 1,700-ft sands and the Kentwood aquifer)

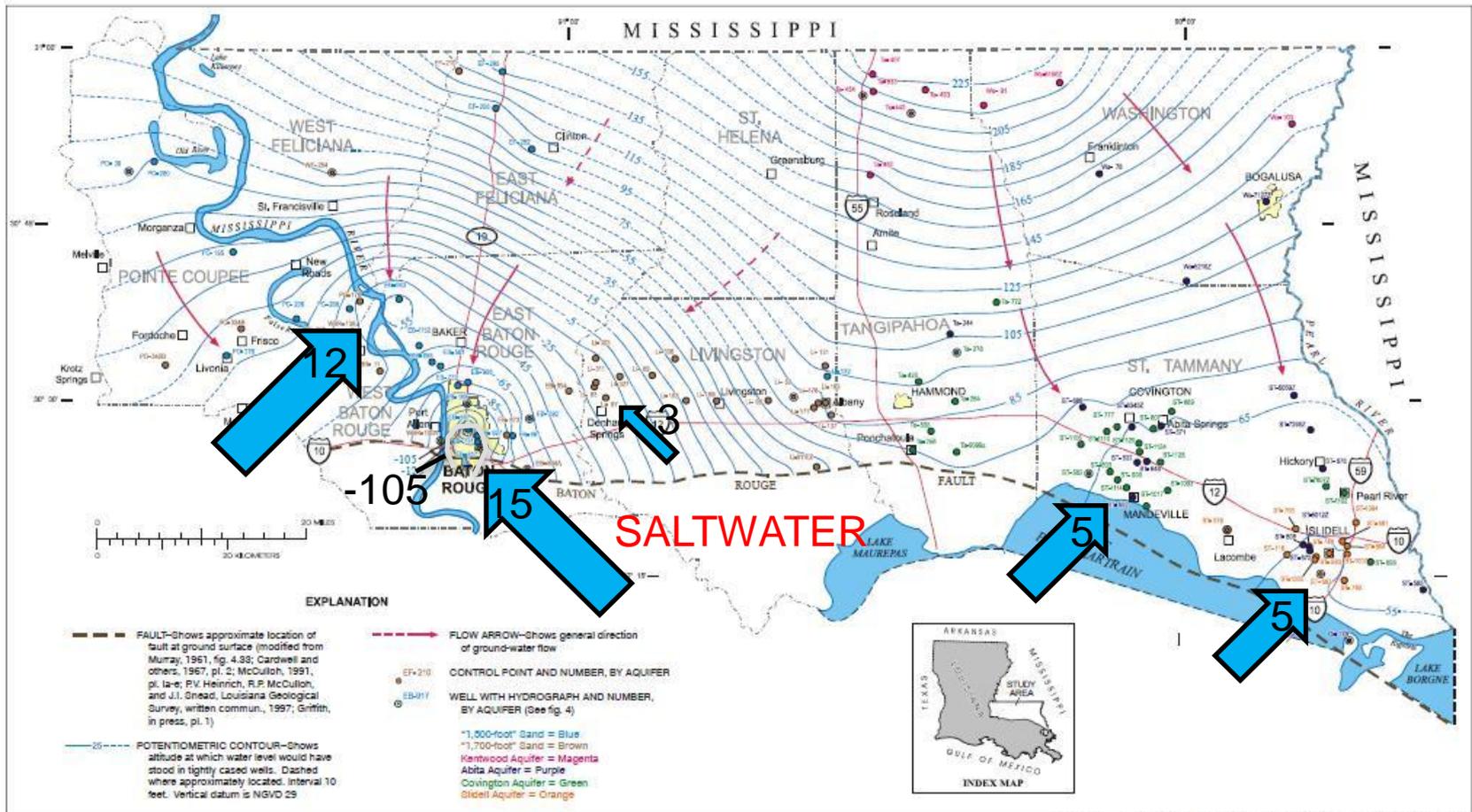
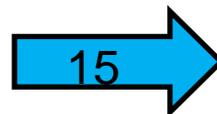


Figure 2. Generalized potentiometric surface of the Kentwood aquifer system and the "1,500-foot" and "1,700-foot" sands of the Baton Rouge area, southeastern Louisiana, March-April 2003.



LOCATION AND RATE (in Mgal/d)
OF WITHDRAWAL CENTER

WATER-LEVEL SURFACE OF THE EVANGLINE EQUIVALENT AQUIFER SYSTEM, 2003

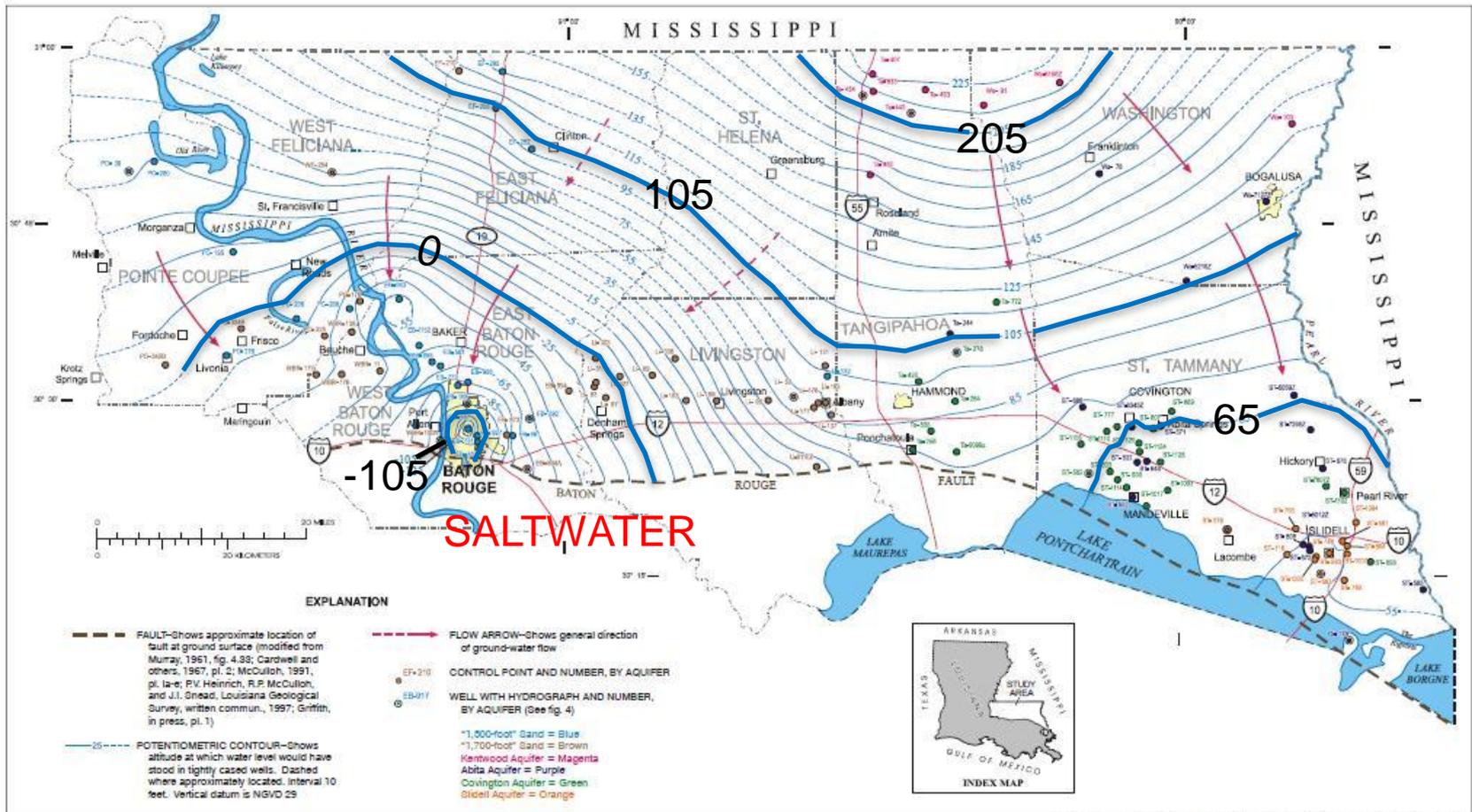
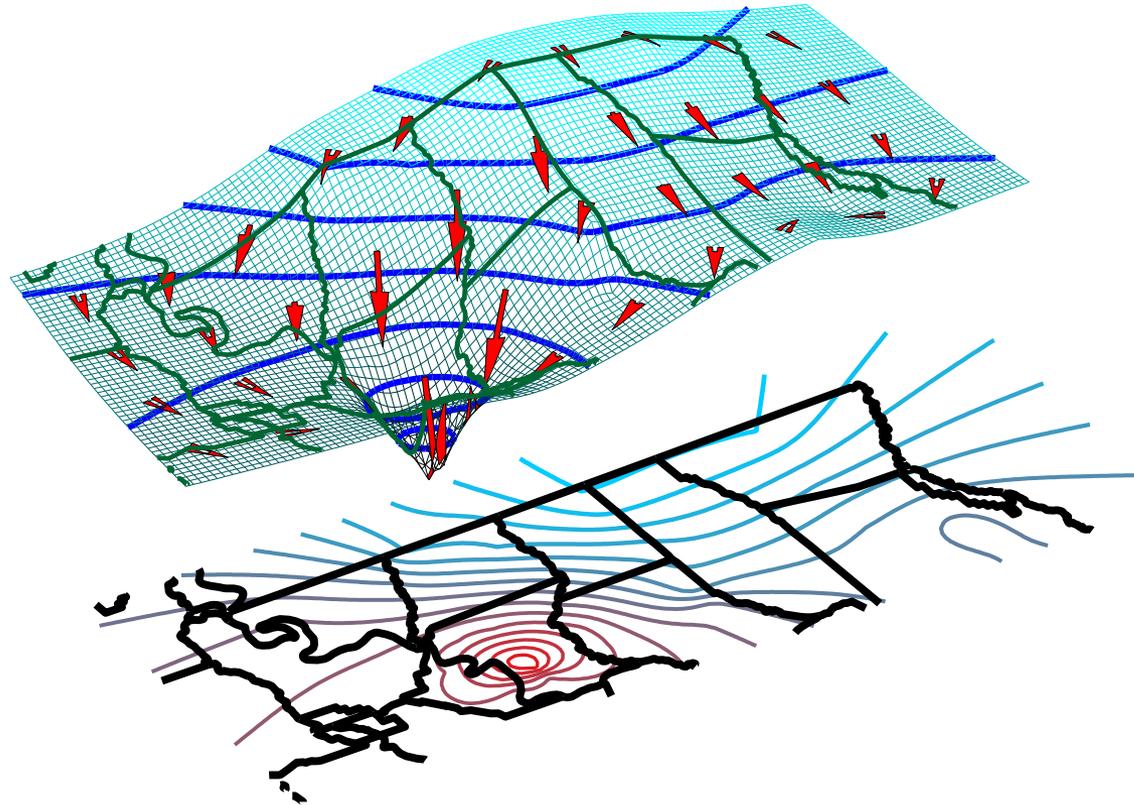


Figure 2. Generalized potentiometric surface of the Kentwood aquifer system and the "1,500-foot" and "1,700-foot" sands of the Baton Rouge area, southeastern Louisiana, March-April 2003.

Southern Hills Water Levels



Generalized Flow Pattern in Southern Hills Aquifer System.

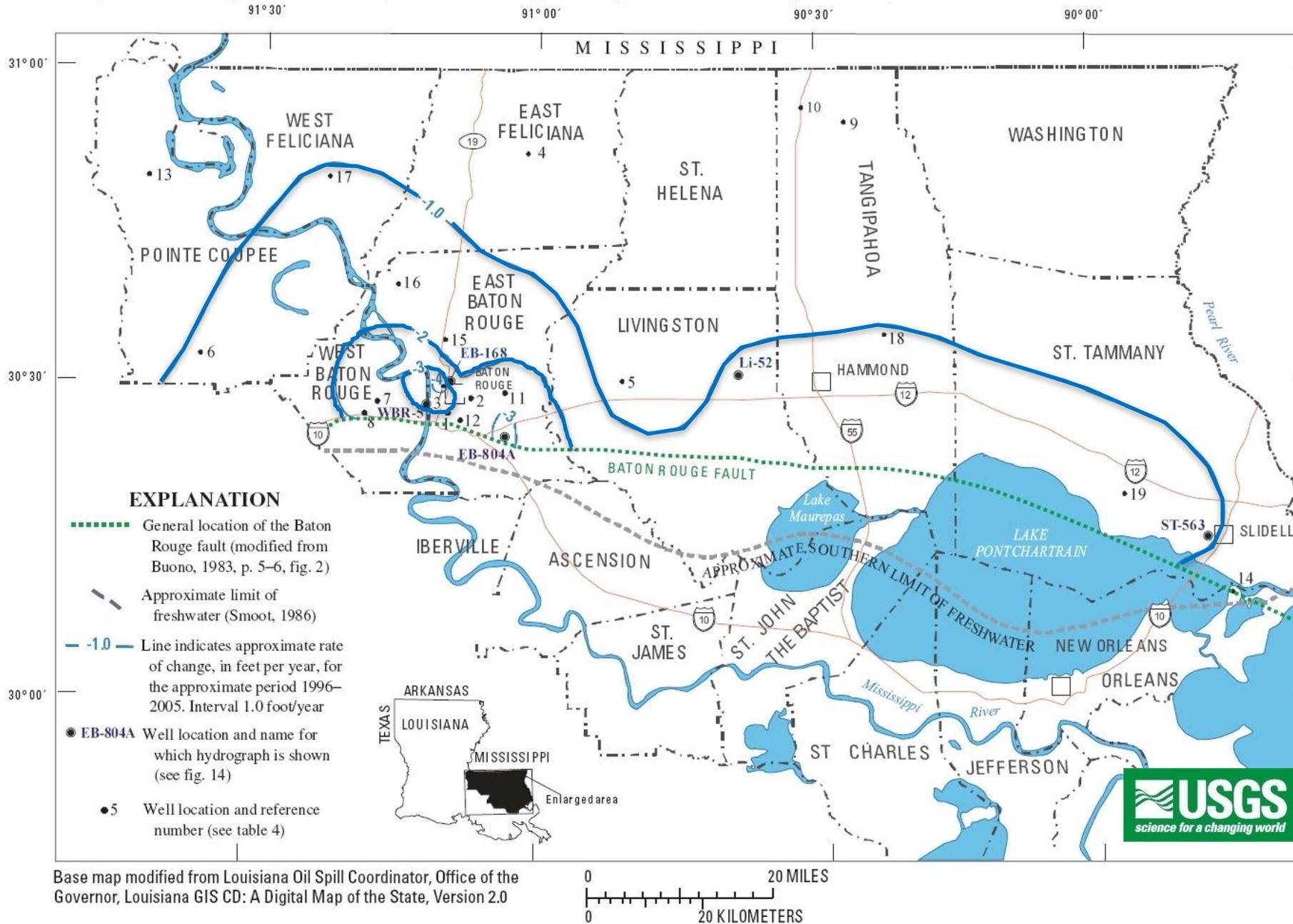


Figure 13. Rate of water-level change north of the Baton Rouge fault in the deep aquifers of the Evangeline equivalent aquifer system in southeastern Louisiana, 1996–2005.

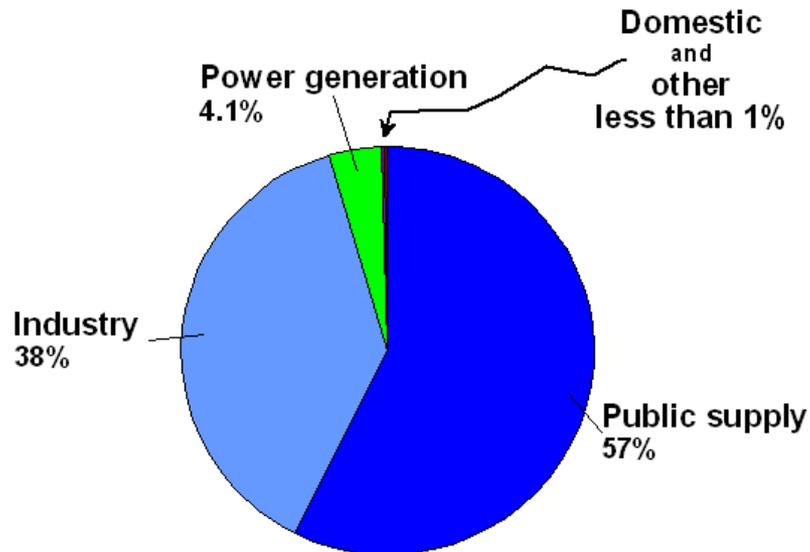
The Southern Hills aquifer system

- The Jasper Equivalent aquifer system
 - Baton Rouge area – “2,000-foot,” “2,400-foot,” and “2,800-foot” sands
 - Florida Parishes – Tchefuncte, Hammond, Amite, Ramsey, and Franklinton aquifers

JASPER EQUIVALENT

AQUIFER SYSTEM

(SOUTHEASTERN LOUISIANA)



**TOTAL WATER USE
126 Mgal/d IN 2005**



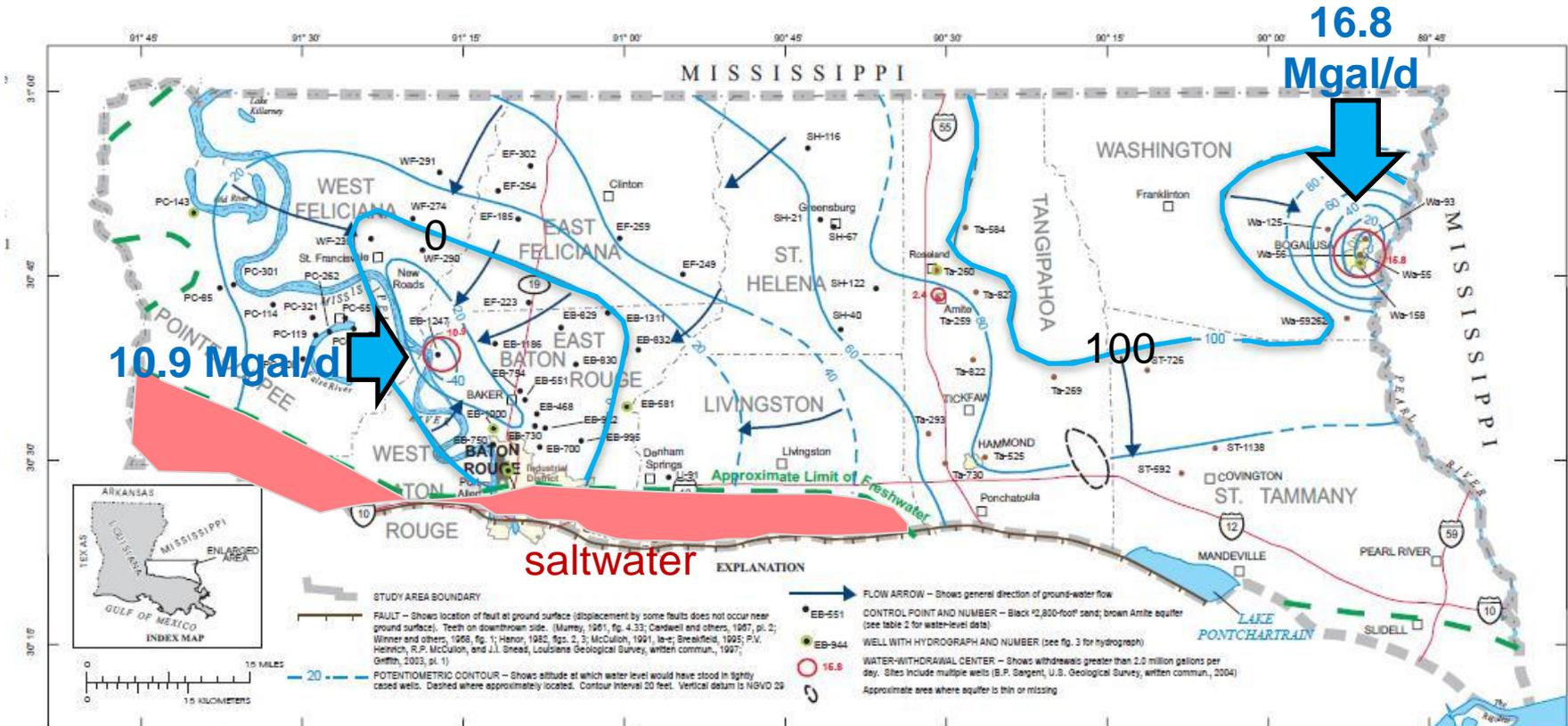
Withdrawals by Parish

Parish	Mgal/d
East Baton Rouge	68.24
East Feliciana	2.68
Iberville	1.25
Livingston	5.76
Pointe Coupee	4.57
St. Helena	.47
St. Tammany	4.39
Tangipahoa	12.21
Washington	21.53
West Baton Rouge	.01
West Feliciana	5.17

Withdrawals, in million gallons per day (Mgal/d)

Public supply	72.57
Industry	47.93
Power generation	5.20
Rural domestic	.31
Livestock	.12
Rice irrigation	.00
General irrigation	.03
Aquaculture	.14
TOTAL	126.29

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
OFFICE OF PUBLIC WORKS, HURRICANE FLOOD PROTECTION, AND INTERMODAL TRANSPORTATION
WATER RESOURCES PROGRAMS



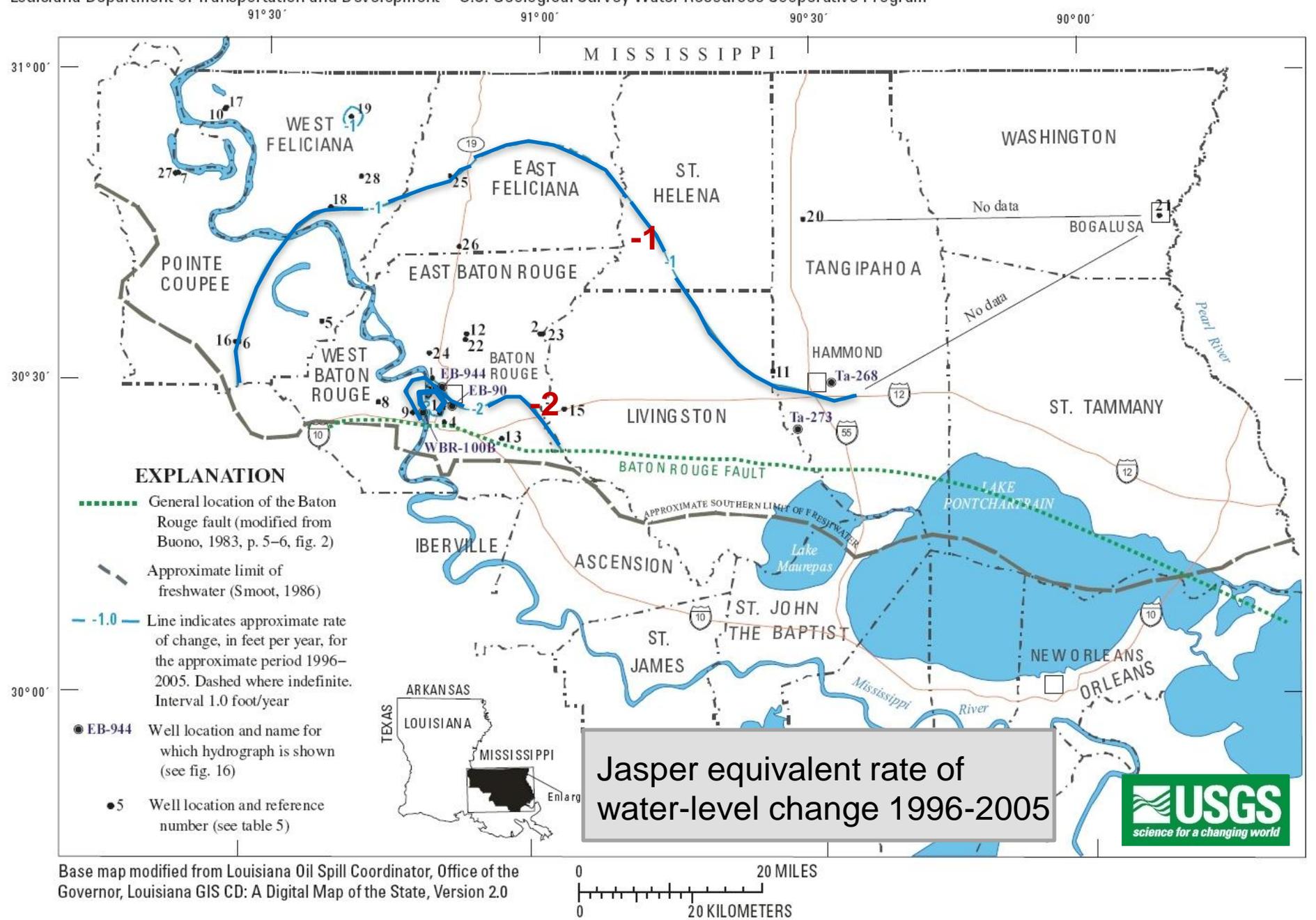


Figure 15. Rate of water-level change north of the Baton Rouge fault in the Jasper equivalent aquifer system in southeastern Louisiana, 1996-2005.

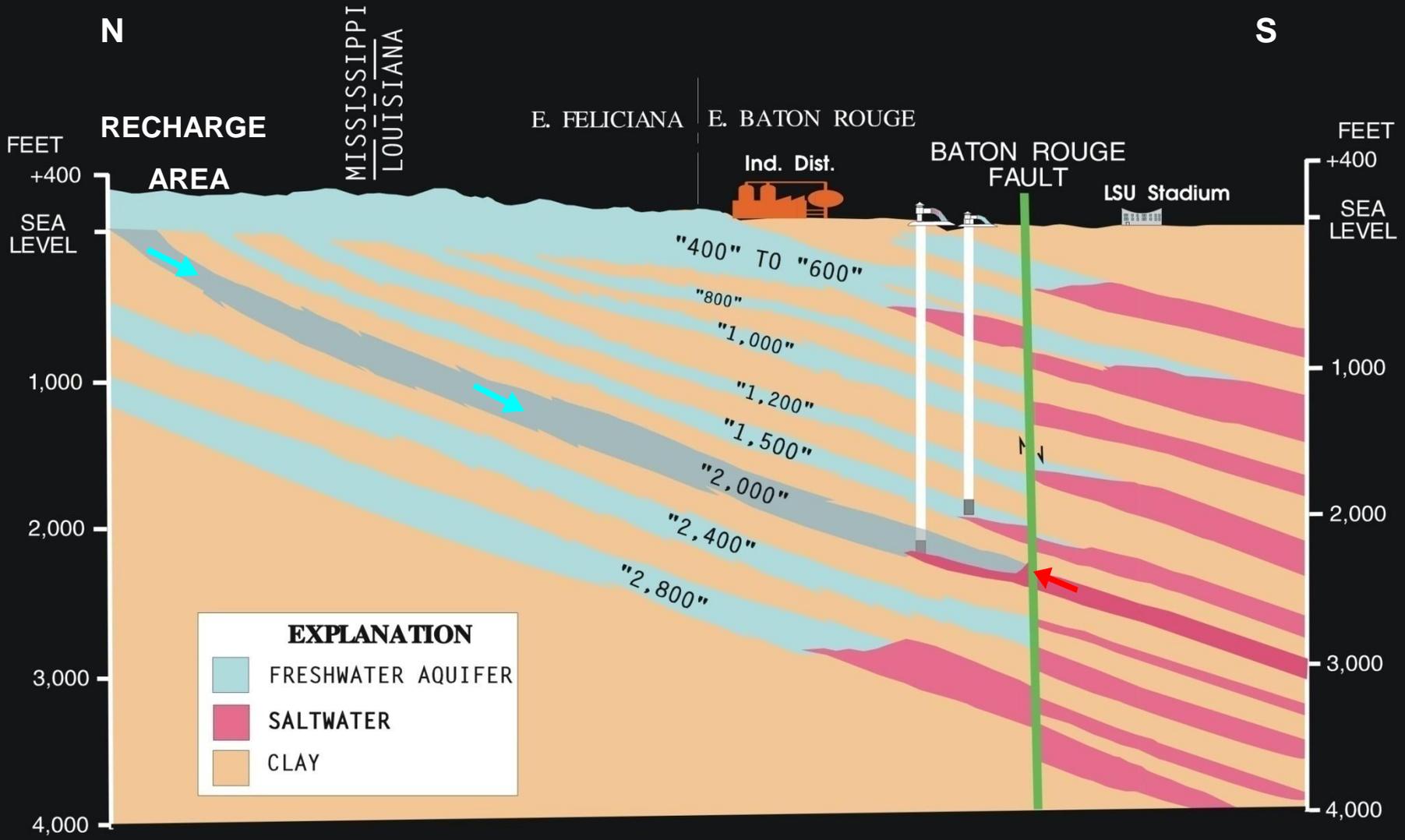
WATER –LEVEL SUMMARY

- Water levels are generally stable or are declining at rates less than 1 ft/yr in recharge areas
- Water levels are generally declining at rates of 1 ft/yr in at least one aquifer south of the recharge area.
- Because freshwater generally is available to depths up to 3,000 ft and there are 8 to 10 aquifers in most areas, fresh groundwater will be available for many decades.
- Exceptions include areas south of the Baton Rouge fault and the Baton Rouge area.

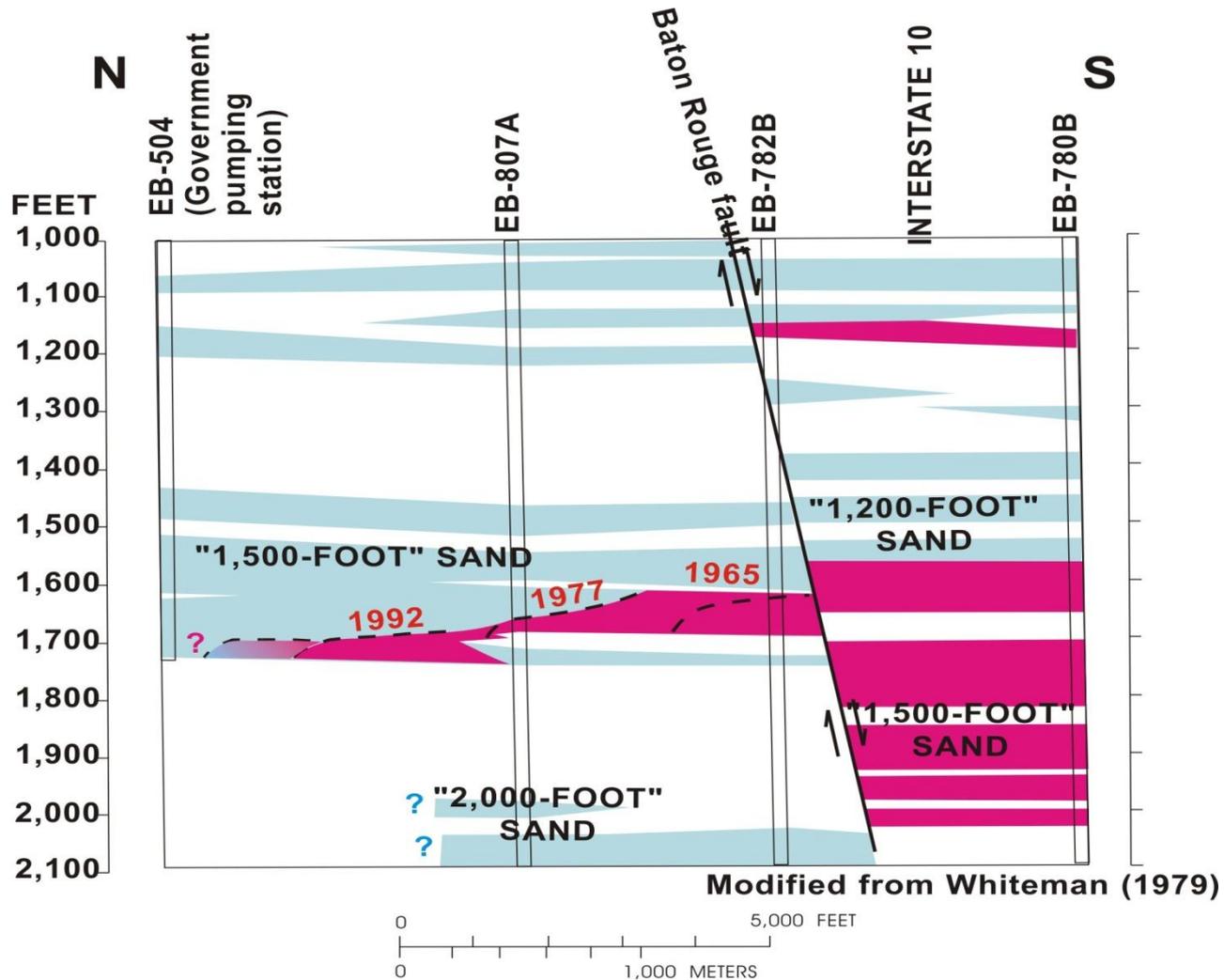
SALTWATER ENCROACHMENT IN SOUTHEASTERN LOUISIANA

- During 2004-05, water samples were collected from 152 wells in East and West Baton Rouge Parishes to document chloride concentrations and the extent of saltwater encroachment
- Chloride concentrations exceeded 10 milligrams per liter in one or more wells north of the fault in the “600-foot,” “1,000-foot,” “1,200-foot,” “1,500-foot,” “1,700-foot,” “2,000-foot,” “2,400-foot,” and “2,800-foot” sands.
- Comparison of the 2004-05 data with historical data indicate chloride concentrations have increased in the “600-foot,” “1,000-foot,” “1,200-foot,” “1,500-foot,” “2,000-foot,” “2,400-foot,” and “2,800-foot” sands north of the Baton Rouge fault.
- In 2005, 100 wells near the Baton Rouge fault in Livingston, Tangipahoa, and St. Tammany Parishes were sampled to document chloride concentrations and determine whether saltwater encroachment was occurring in any other areas along the Baton Rouge fault. No other encroachment was found.

SALTWATER ENCROACHMENT-- 2,000-FOOT" AQUIFER



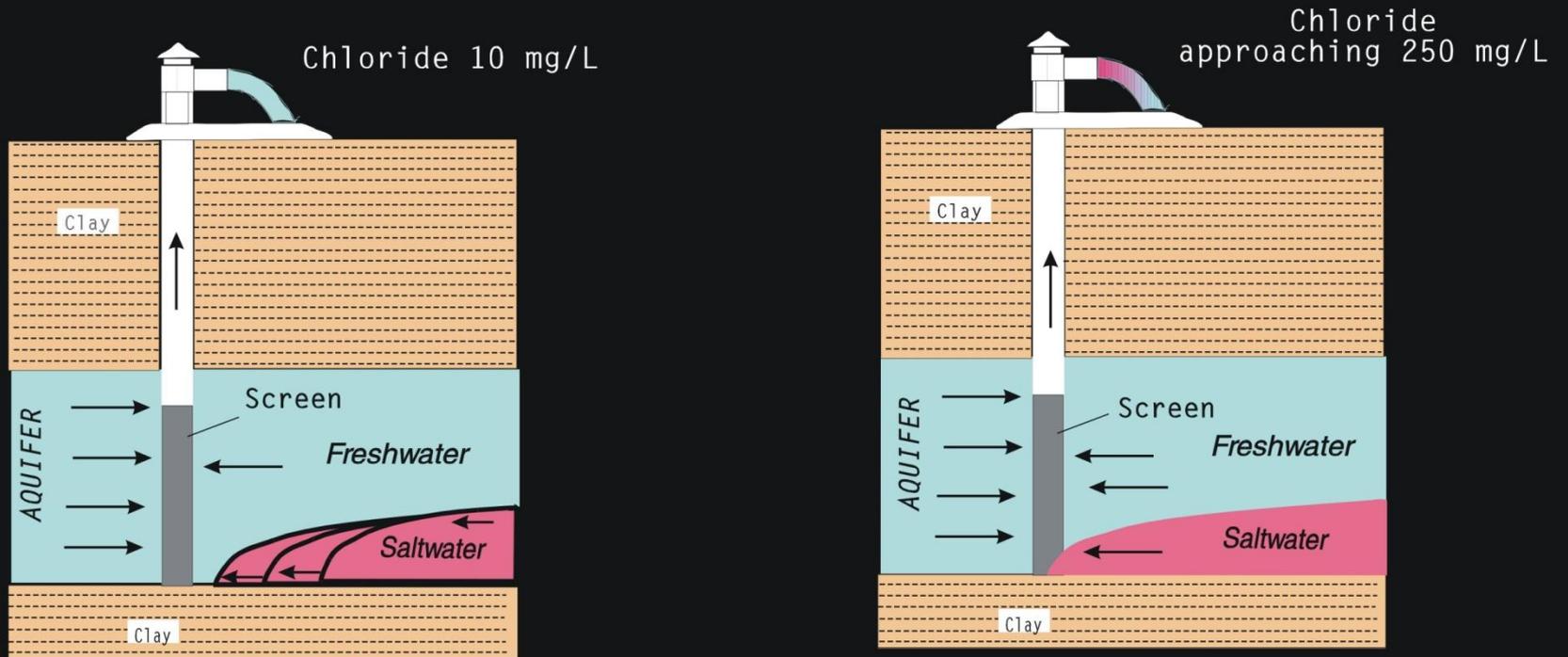
Saltwater Encroachment



Saltwater encroachment toward pumping station in Baton Rouge

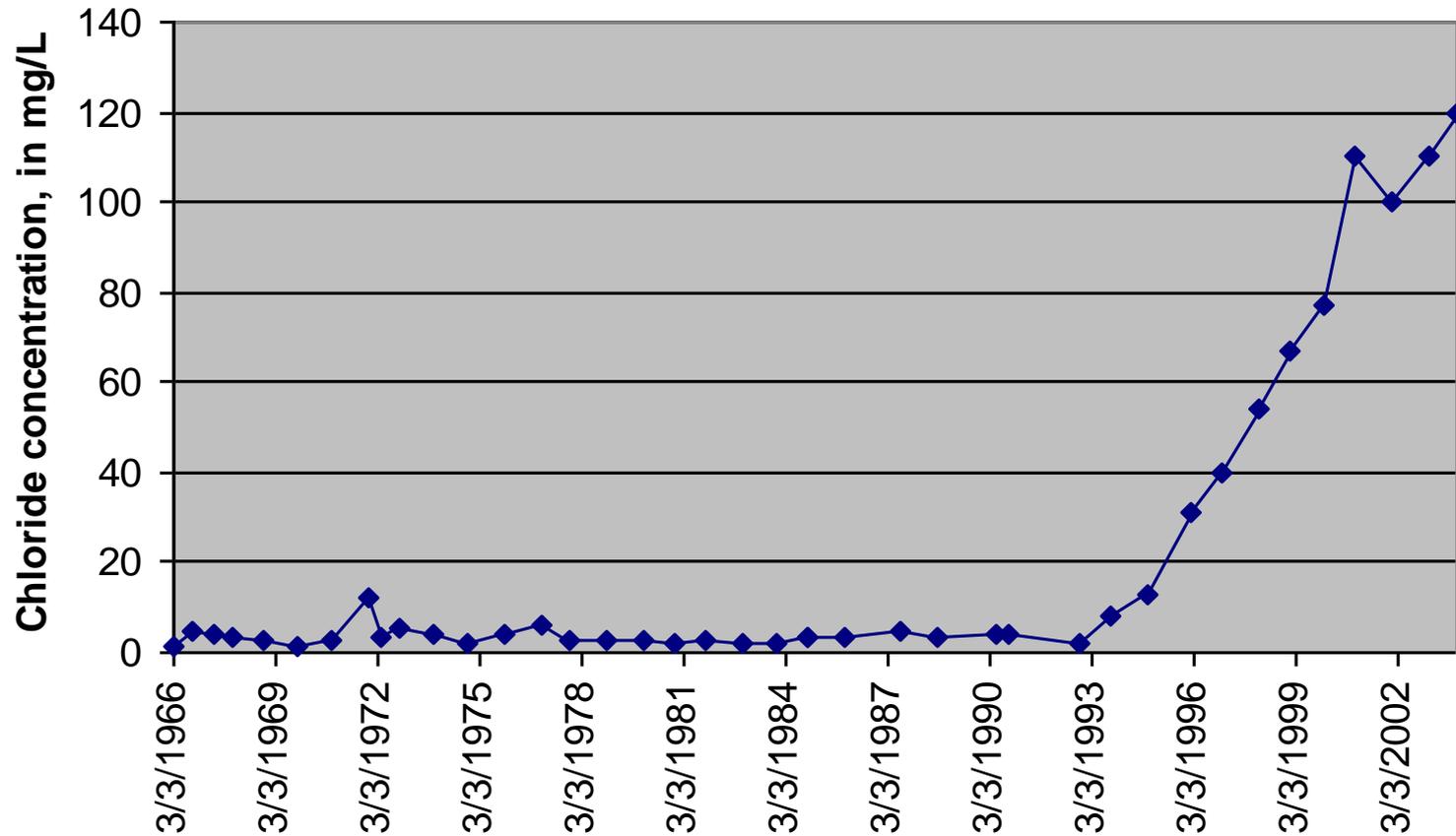
CHLORIDE

Background--less than 10 mg/L
Saltwater--greater than 3,000 mg/L
Drinking water standard--250 mg/L



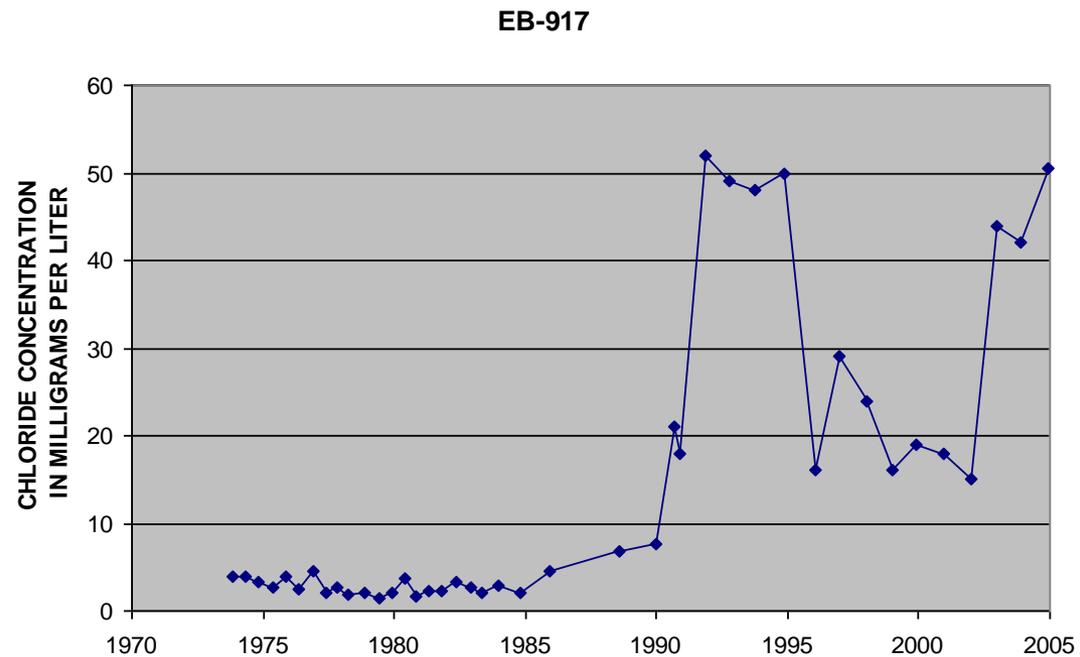
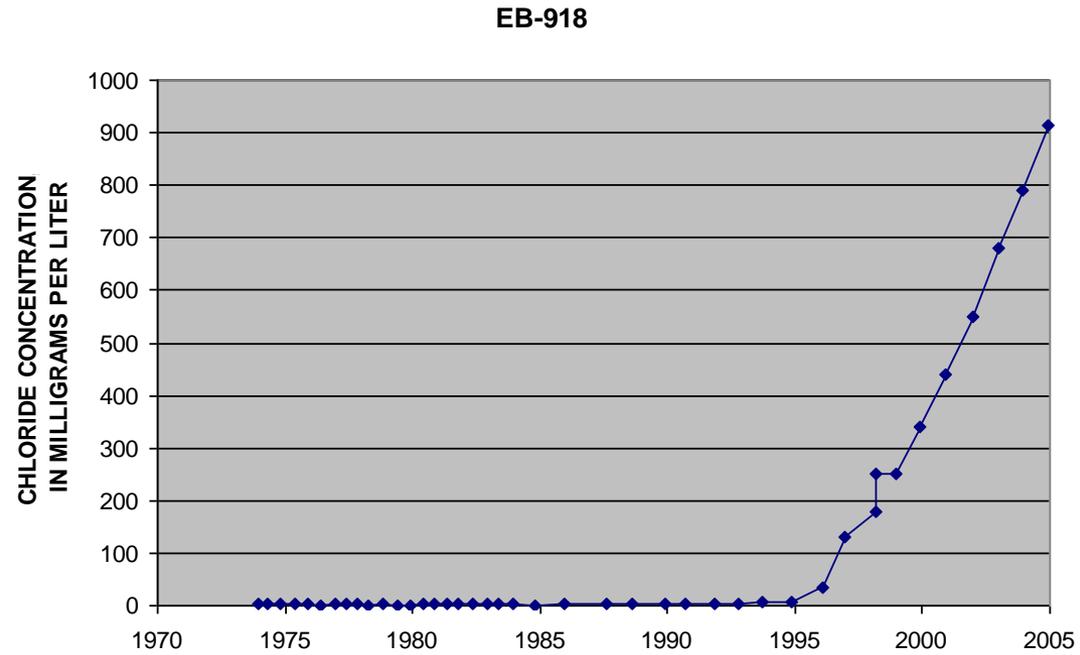
HORIZONTAL ENCROACHMENT OF SALTWATER

EB-804B

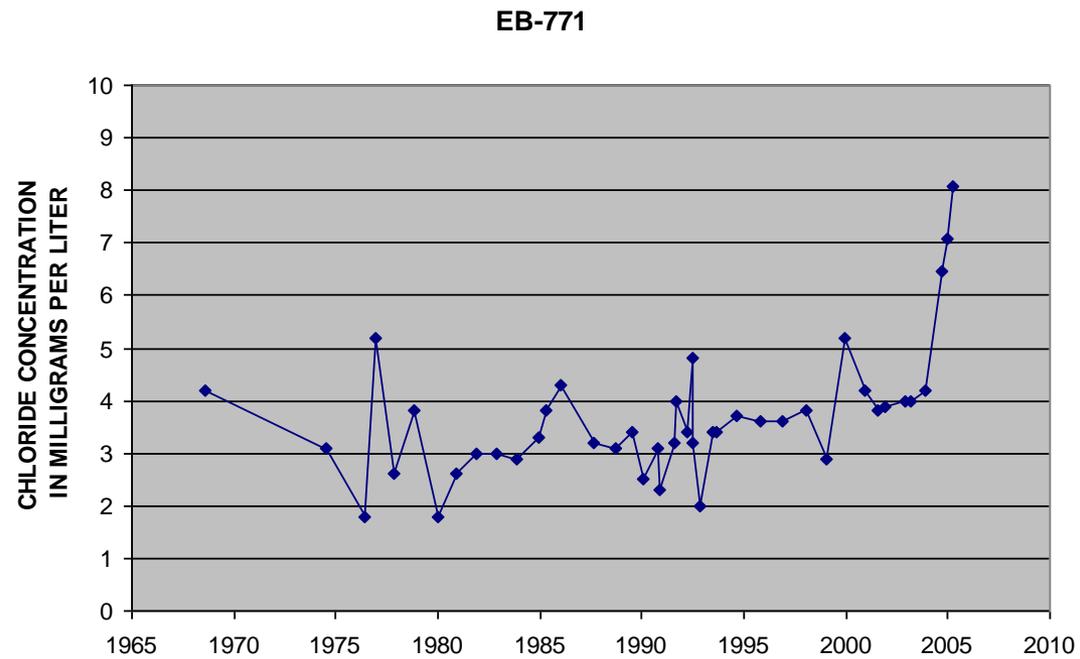
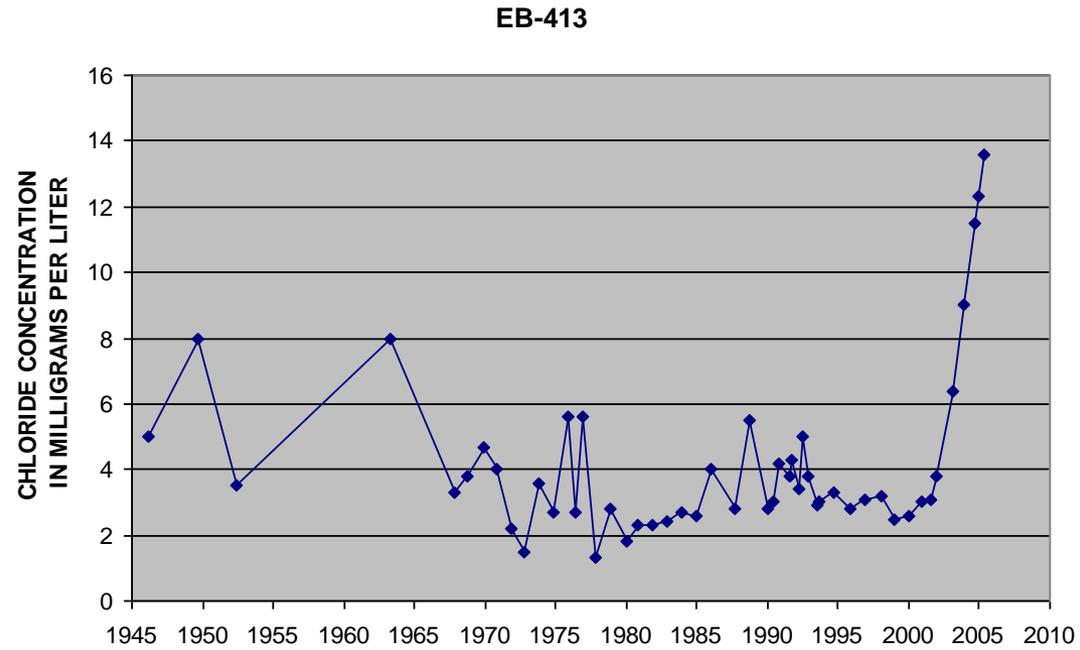


Chloride concentrations increased rapidly at a USGS observation well screened in the 2,400-foot Baton Rouge sand and located near the Baton Rouge fault.

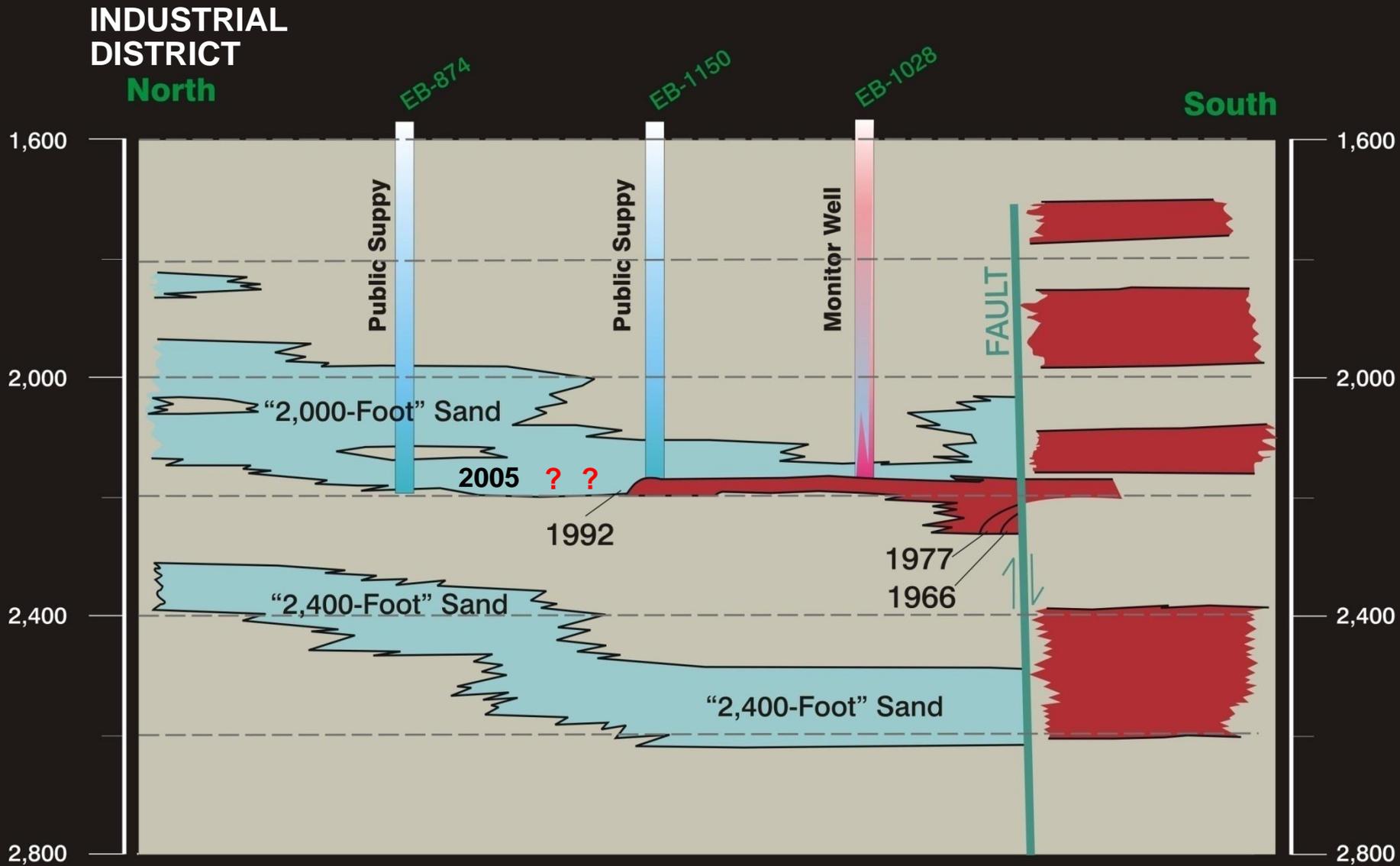
Graphs of chloride concentrations in USGS observation wells screened in the “1,500-foot” sand and located between the Baton Rouge fault and the “connector” well



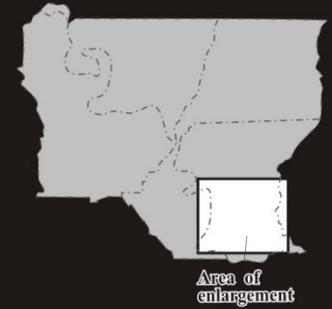
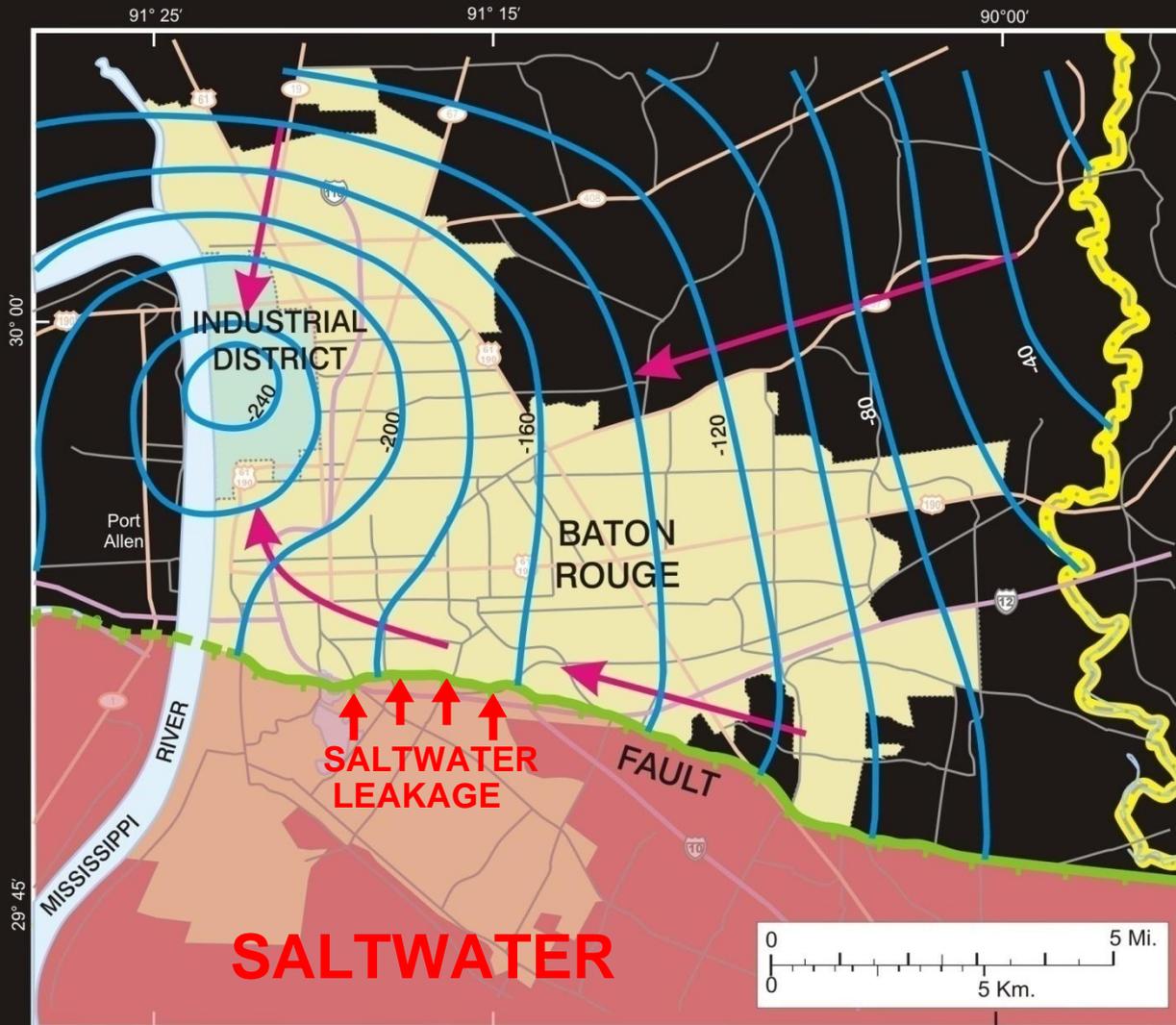
Graphs of chloride concentrations in public supply wells screened in the "1,500-foot" sand at the Government St. station

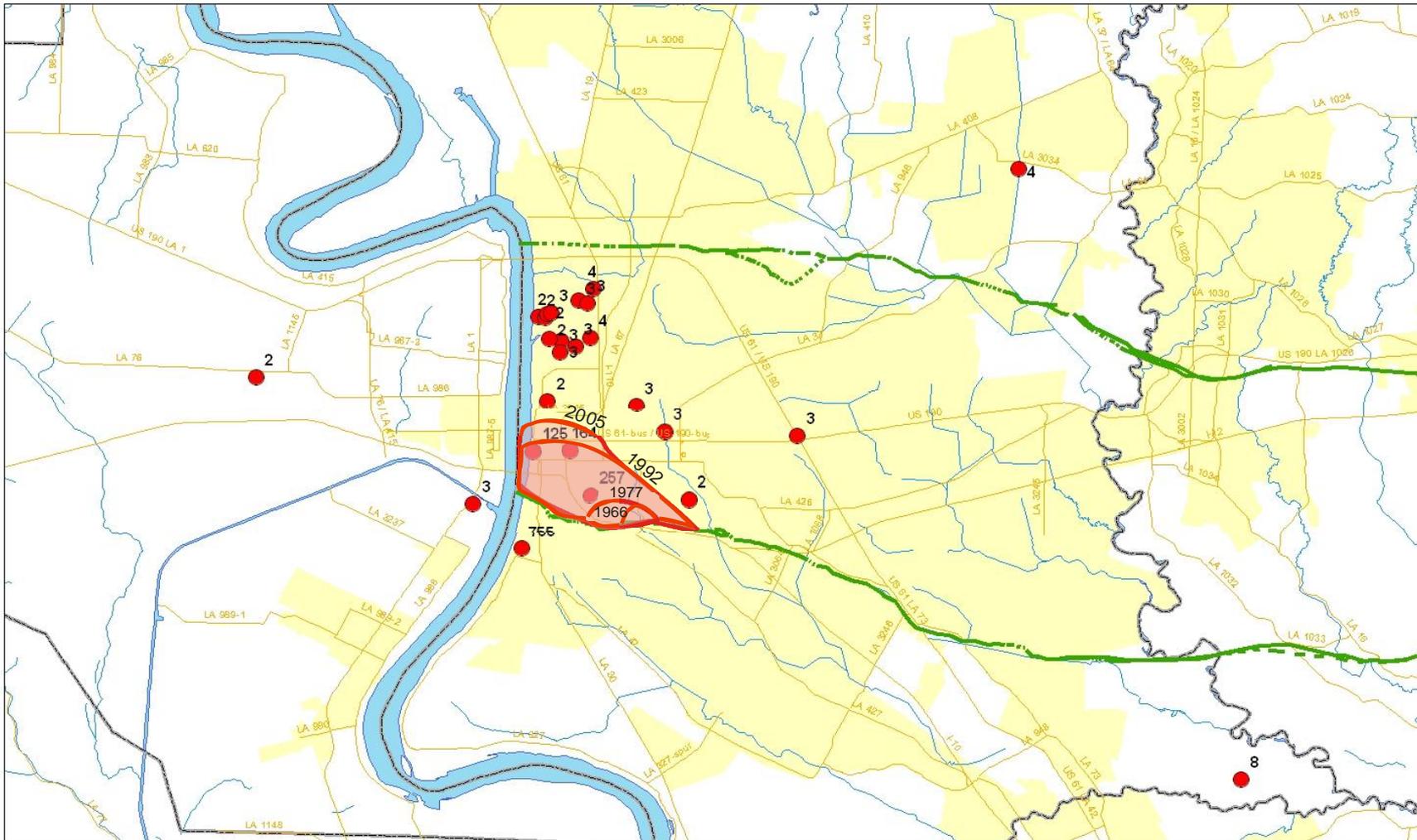


MOVEMENT OF SALTWATER IN THE "2,000-FOOT" SAND

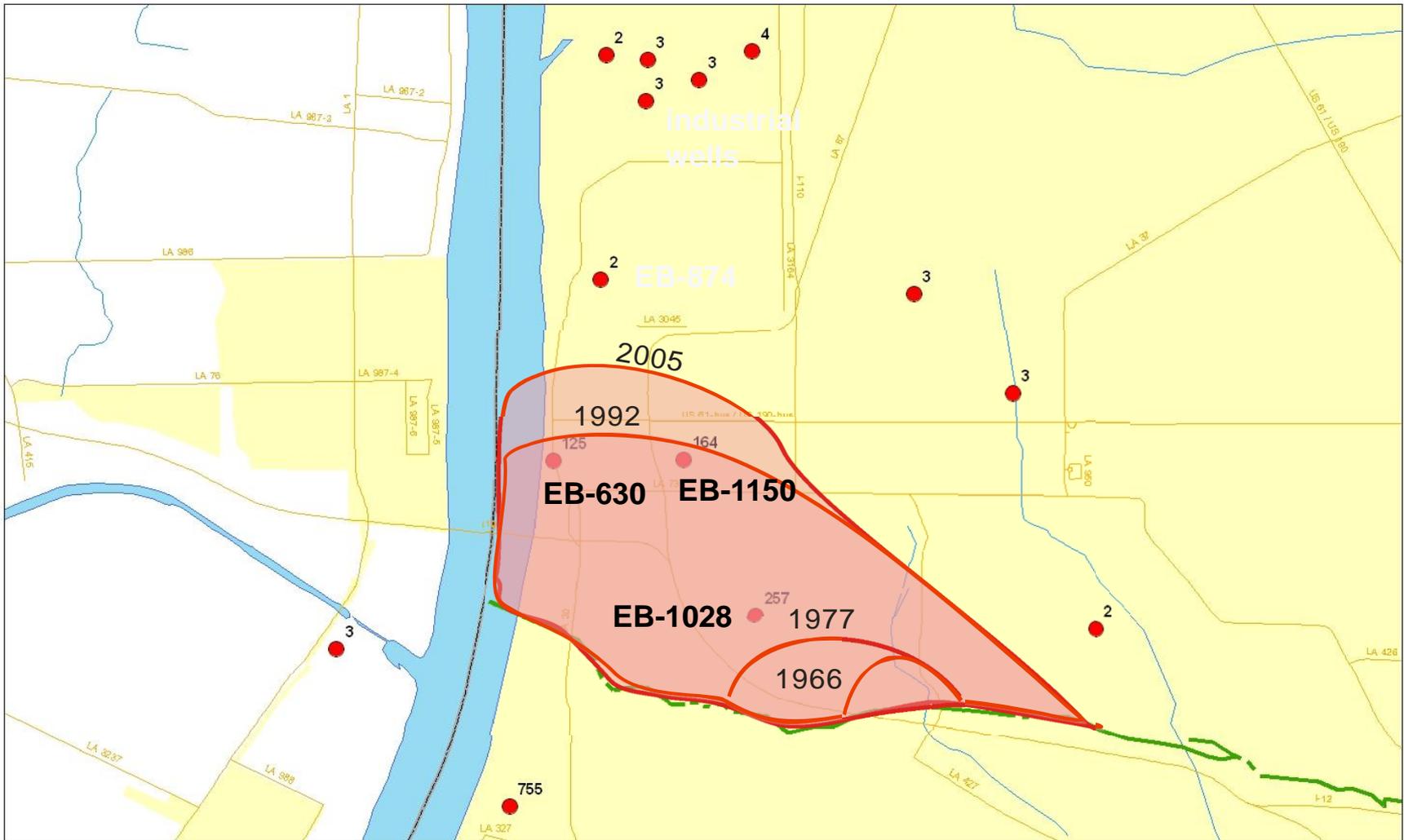


POTENTIOMETRIC SURFACE AND GROUND-WATER FLOW IN THE "2,000-FOOT" SAND, 2002



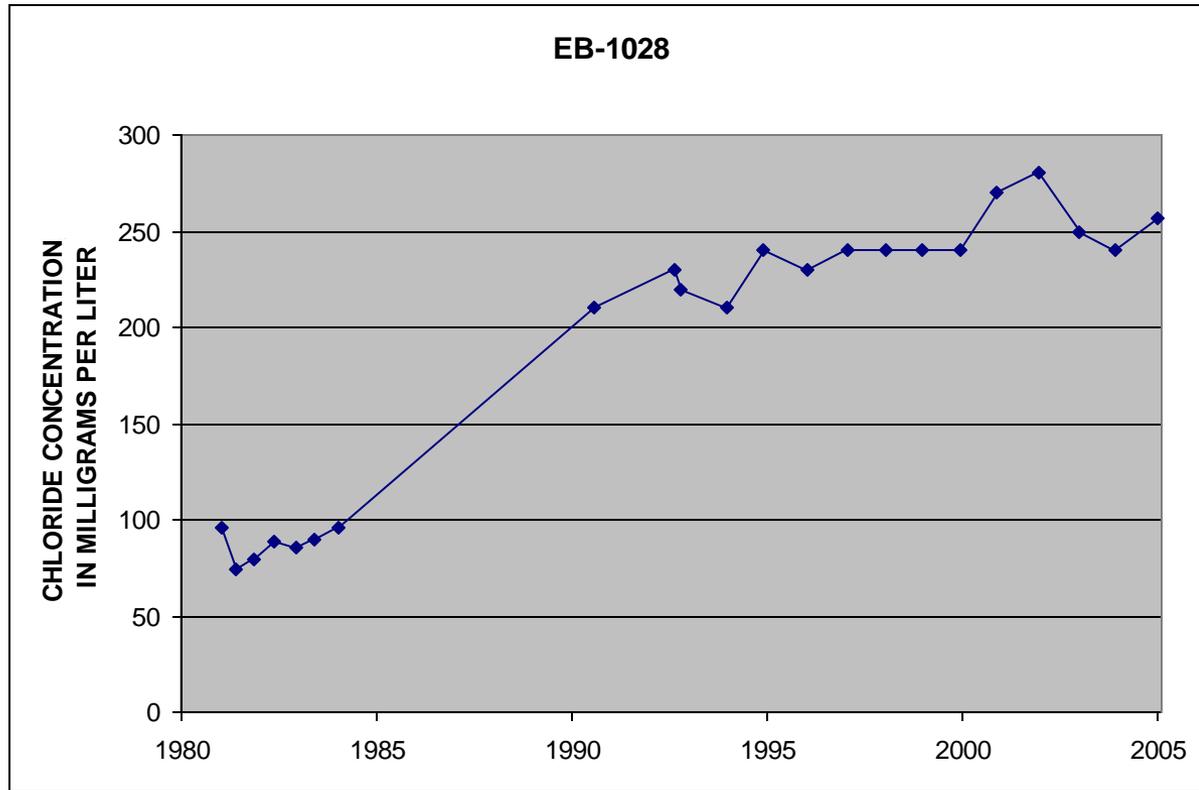


SALTWATER ENCROACHMENT IN THE 2,000-FT SAND, BATON ROUGE

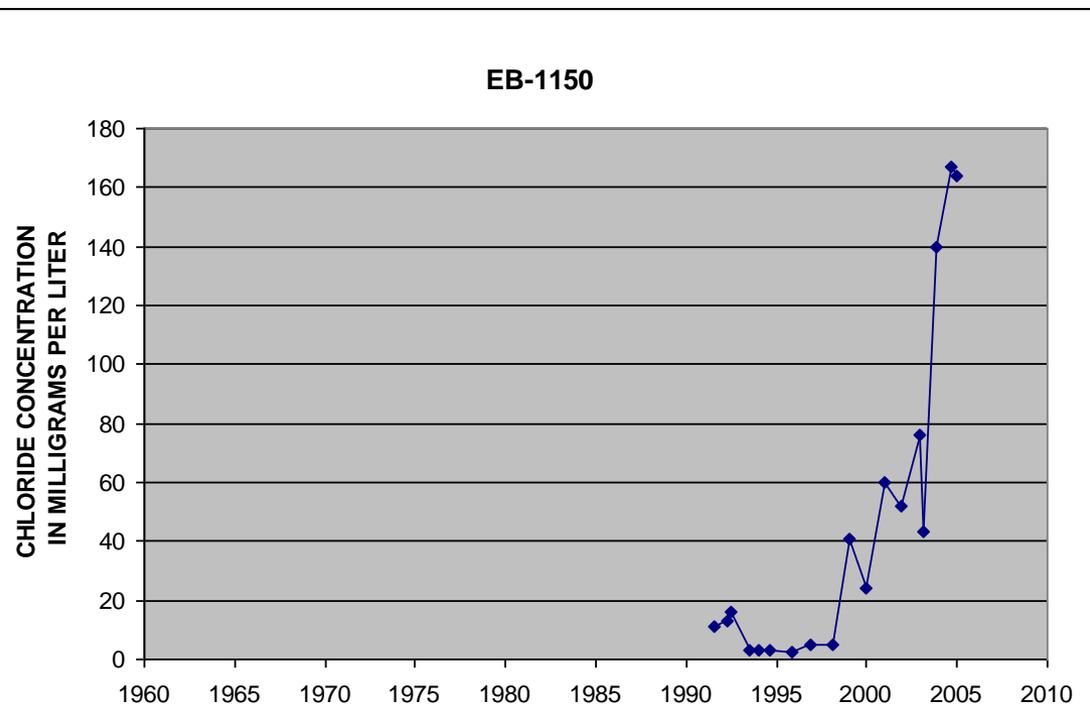
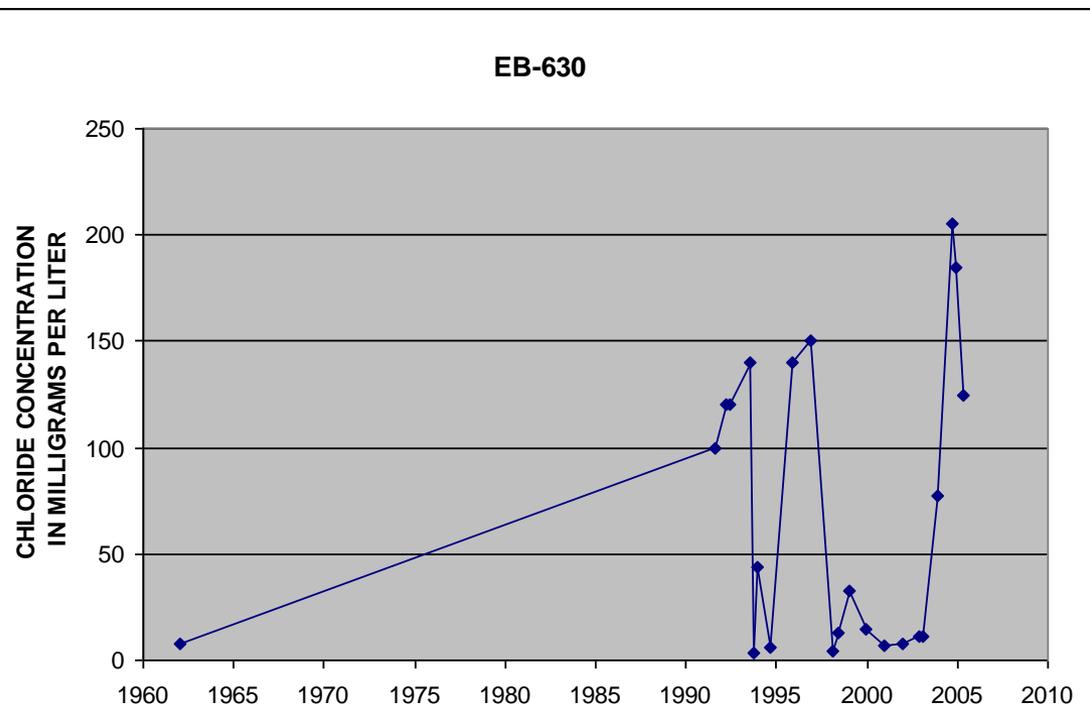


SALTWATER ENCROACHMENT IN THE 2,000-FT SAND, BATON ROUGE

Graph of chloride concentrations at well EB-1028 screened in the “2,000-foot” sand and located between the Baton Rouge fault and downtown pumping stations



Graphs of chloride concentrations in downtown Baton Rouge public supply wells screened in the “2,000-foot” sand



SALTWATER ENCROACHMENT SUMMARY

- Chloride concentrations are increasing in several aquifers in areas immediately north of the Baton Rouge fault in the Baton Rouge area due to heavy pumping north of the fault.
- There is no indication of saltwater encroachment across the fault in any other area of southeastern Louisiana
- Computer models have been or are being developed to further our understanding of the saltwater movement and evaluate potential strategies for control. These include a model of the “1,500-ft” sand developed by Dr. Frank Tsai, LSU Dept. of Civil Engineering, and a model of the “2,000-ft” sand currently being developed by the USGS

For more information on ground-water conditions in Louisiana, visit the USGS Louisiana District web site at:

la.water.usgs.gov

or contact John Lovelace by phone at (225) 298-5481 ext. 3210 or by email to jlovelac@usgs.gov

Mr. Jeff Jones

DNR Office of Conservation

Water Well Evaluation: How it works?
**Case Example – Liberty Gas Storage,
Cameron Parish**



Water Well Notification & Evaluation Process

Statutory Law & Regulations

La. R.S. 38:3097.1 et seq

1. Effective July 2001

a. Well Owners required to notify agency of well installation

2. LAC Title 43, Part VI, Subpart 1 (GW Mgt.)

a. Form GWR-01 – Water Well Notification



Water Well Notification & Evaluation Process

Notification Form

- 1. Registration - (all well uses)**
 - a. GWR-01 Form Review**
 - b. Technically and Administratively Complete**
 - i. Agency Approval**
 - ii. SONRIS Entry**
- 2. Evaluation**
 - a. Preserve and manage resource by addressing:**
 - i. Adverse impacts to nearby water wells**
 - ii. Aquifer sustainability issues such as:**
 - » Saltwater incursion**
 - » Subsidence**
 - » Water level decline**



Water Well Notification & Evaluation Process

Notification Form



Louisiana Office of Conservation
Environmental Division
Ground Water Resources (GWR)
Water Well Notification

OFFICE OF CONSERVATION USE	
GWR ID:	
AGC ORDER #:	
Review Date:	By:

PLEASE PRINT

1. WELL INSTALLATION NOTIFICATION TYPE (Choose A, B, C, or D)

A. 60 Days Prior to Well Installation Notification
Well Use: _____

B. Information Change from earlier form: GWR ID NO. _____

C. Cancel Existing Notification GWR ID NO. _____

D. 60 Days Post Well Installation (Identify Well Type)

1) Drilling Rig Supply Oil or Gas Well Serial No.: _____
(If none, attach location description.)

2) Drought Relief
Drought Relief Emergency Order No.: _____

3) Replacement Well GWR ID NO.: _____
DOTD Well NO.: _____
The replacement well is within 1,000 feet of the well it replaced; is within the same property boundary; is installed in the same aquifer and is screened at the same interval; it has the same pumping rate as the well it replaced and is used for the same purpose; the well it has replaced was or will be plugged and abandoned within 30 days of this submittal. Well Use: _____
I verify the above information is correct (well owner signature) _____

4) Domestic Well

2. OWNER INFORMATION

Owner's Name (Company's Name if Owner): _____

Contact Name (Print): _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Phone # () - _____ Fax # () - _____

Email Address: _____

3. DRILLER INFORMATION

LDOTD License # WWC _____

Company Name: _____

Contact Name (Print): _____

Phone # () - _____ Fax # () - _____

Email Address: _____

4. WELL LOCATION

Parish: _____

Latitude: _____

Longitude: _____

5. WELL CONSTRUCTION DETAILS

Casing Diameter (Inches): _____

Screen Diameter (Inches): _____

Screen Top Depth (Feet): _____

Screen Bottom Depth (Feet): _____

Total Depth (Feet): _____

Aquifer Screened: _____

Owner's Well Number (if any) _____

Owner's Well Name (if any) _____

6. WATER WITHDRAWAL (attach comments if needed)

Pumping Rate (Gallons Per Day): _____

No. of Days Per Year: _____

7. COMPLETION DATE or ESTIMATED COMPLETION DATE: _____

8. CERTIFICATION STATEMENT

"I hereby certify that the information provided herein is true and accurate."

OWNER or AUTHORIZED AGENT'S SIGNATURE: _____

PRINT NAME: _____ DATE: _____

Mail to: Louisiana Office of Conservation
Environmental Division
Ground Water Resources
P.O. Box 94275
Baton Rouge, LA 70804-9275
Web: <http://dnr.louisiana.gov/gwater>
Email: gwater@la.gov
Phone: (225) 342-8244 Fax: (225) 342-5529

This form may be photocopied. GWR-01Rev101608



Water Well Notification & Evaluation Process

Evaluation Form

**Environmental Division
Technical Staff Review
Ground Water Well Prior Notification Form Evaluation Checklist**

GWR ID No. _____ Date Issued _____

Note: A GWR ID Number is issued only after the notification form has been determined by technical staff to be both administratively and technically complete and the form data has been entered into SONRIS.

1. Is the proposed well located in areas where agency restrictions or other permitting requirements or restrictions may exist and apply?

a. Area of Groundwater Concern (AGC)

i. Is the location of the proposed well within an Office of Conservation area of ground water concern?

Yes _____ No _____

AGC ID: _____

ii. If yes to question 2.a.i., then is the location of the proposed well within an Office of Conservation critical area of ground water concern?

Yes _____ No _____ N/A _____

b. Is the proposed water well located within one of the Capital Area Groundwater Conservation Commission parishes?

Yes _____ No _____

c. Is the proposed location of the water well within the geographical area of any local or parish drinking water protection ordinances listed and delineated by the DEQ Aquifer Evaluation Program?

Yes _____ No _____

i. If yes, identify the ordinance(s): _____

ii. If yes, is the proposed well type (use) restricted by the ordinance(s)?

Yes _____ No _____

d. Following review of the Source Water Assessment Program areas (SWAP)/Wellhead Protection area database on SONRIS GIS, is the location of the proposed water well within a SWAP/Wellhead Protection area?

Yes _____ No _____

i. If yes, list SWAP/Wellhead Protection Area(s) ID _____

Document findings for 1.a, b, c or d in well file and note possible restrictions, as applicable (also include any correspondence with other agencies).

Comments (Provide attachment if needed): _____

Rev122408 Page 1 of 4

2. Using available USGS, DEQ, and DHH/OPH databases and other resources, are there any regional or local ground water related issues or immediate effects reported in the area of the proposed well location such as the following?

a. Salt Water Encroachment

i. Is salt water encroachment a documented problem for this area?

Yes _____ No _____

ii. If yes, then explain and provide supportive documentation in file:

Comments (Provide attachment if needed): _____

b. Water Level Decline

i. Are there documented water level decline problems in this area?

Yes _____ No _____

ii. If yes, then explain and provide supportive documentation in file:

Comments (Provide attachment if needed): _____

c. Land Subsidence

i. Has the Office of Conservation received any reports of land subsidence for this area?

Yes _____ No _____

ii. If yes, then explain and provide supportive documentation in file:

d. Groundwater Contamination

i. Are there any DOTD registered monitoring wells within ¼ mile of the proposed water well location?

Yes _____ No _____

ii. If yes, then explain and provide supportive documentation in file:

iii. Are there any published DEQ or DHH reports of groundwater contamination or public drinking water supply notices for this area?

Rev122408 Page 2 of 4



Water Well Notification & Evaluation Process

Evaluation Form

Yes _____ No _____

iv. If yes, then report any restrictions and provide supportive documentation in file:

Comments (Provide attachment if needed): _____

3. Based on a search of DNR-OC / DOTD databases to identify all registered wells screened in the target aquifer zone, are there potential well interference issues within ¼ mile radius of proposed well location?

a. Considering the proposed production, does the proposed well spacing present the potential for adverse effects on nearby registered water wells?

Yes _____ No _____

i. If yes, then explain and provide supportive documentation in file:

b. Do aerial maps of the nearby surrounding area of the proposed well location show structures that may have unregistered water wells?

Yes _____ No _____

i. If yes, then explain and provide supportive documentation in file:

c. Do published geologic water resources bulletins or oil and gas electric logs show hydraulic connectivity between different zones or geologic formations within the aquifer in which the proposed water well is to be screened? Check Not Applicable (NA) if different zones or geologic formations do not exist.

Yes _____ No _____ NA _____

d. Do published geologic water resources bulletins or available oil and gas electric logs show hydraulic connectivity between different fresh water aquifers located in the area surrounding the proposed water well under evaluation? Check Not Applicable (NA) if different fresh water aquifers are not located in the area under evaluation.

Yes _____ No _____ NA _____

If potential well interference issues are identified above, predict / project effect of proposed well use on existing wells located within ¼ mile. Run MODFLOW model or use other acceptable drawdown calculations.

Document findings, including DOTD ¼ mile well listing in well file and, if applicable, any modeling or drawdown calculation results.

Comments (Provide attachment if needed): _____

Rev122408 Page 3 of 4

4. Overall and based on the findings of items 1, 2 and 3, does the potential for adverse effects on nearby registered water wells exist?

Yes _____ No _____

Comments (Provide attachment if needed): _____

5. Overall and based on findings of items 1, 2 and 3, does the potential exist for adverse impacts to the sustainability of the aquifer from which the proposed well is to produce?

Yes _____ No _____

Comments (Provide attachment if needed): _____

6. If the answer to either 4. or 5. above is yes, request the well owner to provide a Ground Water Use Impact Study on potential effects on surrounding wells and aquifer sustainability. Review study for acceptance as basis for agency decision.

a. Was study provided?

Yes _____ No _____ NA _____ Date Study Requested _____

b. Was study acceptable? Date Study Received _____

Yes _____ No _____ NA _____ Date Study Review Completed _____

If yes to both 6.a. and b., accept study, include in well file and conclude evaluation. If no study was provided or if it is unacceptable, conclude evaluation with recommendations to place restrictions, limit production, require well relocation, etc. in accordance with statutory and regulatory requirements. Document findings in well file.

Comments (Provide attachment if needed): _____

7. Based on the evaluation, provide suggested recommendations and briefly summarize the main reason(s) supporting that suggestion (e.g., "There are no concerns with regard to the proposed installation and operation of this well, as no potential well interference issues have been identified within the proposed well location ¼ mile radius target zone, and no documented connectivity of zones within aquifer in this area."). Provide attachment if needed.

Reviewer _____ Date Reviewed _____

Rev122408 Page 4 of 4



Water Well Notification & Evaluation Process

Case Example – Liberty Gas Storage, Cameron Parish

1. **Environmental Division Technical Staff conducts Review of Ground Water Well Prior Notification Form Evaluation Checklist**
2. **Issues Identified**
 - a. **Potential Salt Water Encroachment**
 - b. **Potential Water Level Decline**
 - c. **Potential Land Subsidence**
3. **Request and Review Ground Water Use Impact Study**
4. **Order Implementation of Approved Scope of Work Described in Study**

OFFICE OF CONSERVATION

FEAK 0 2 2009

ENVIRONMENTAL DIVISION

**Analysis of Groundwater Withdrawal Impacts
on the Chicot Aquifer
Liberty Gas Storage Expansion Project
Cameron Parish, Louisiana**

Prepared for

 **Liberty Gas Storage LLC**

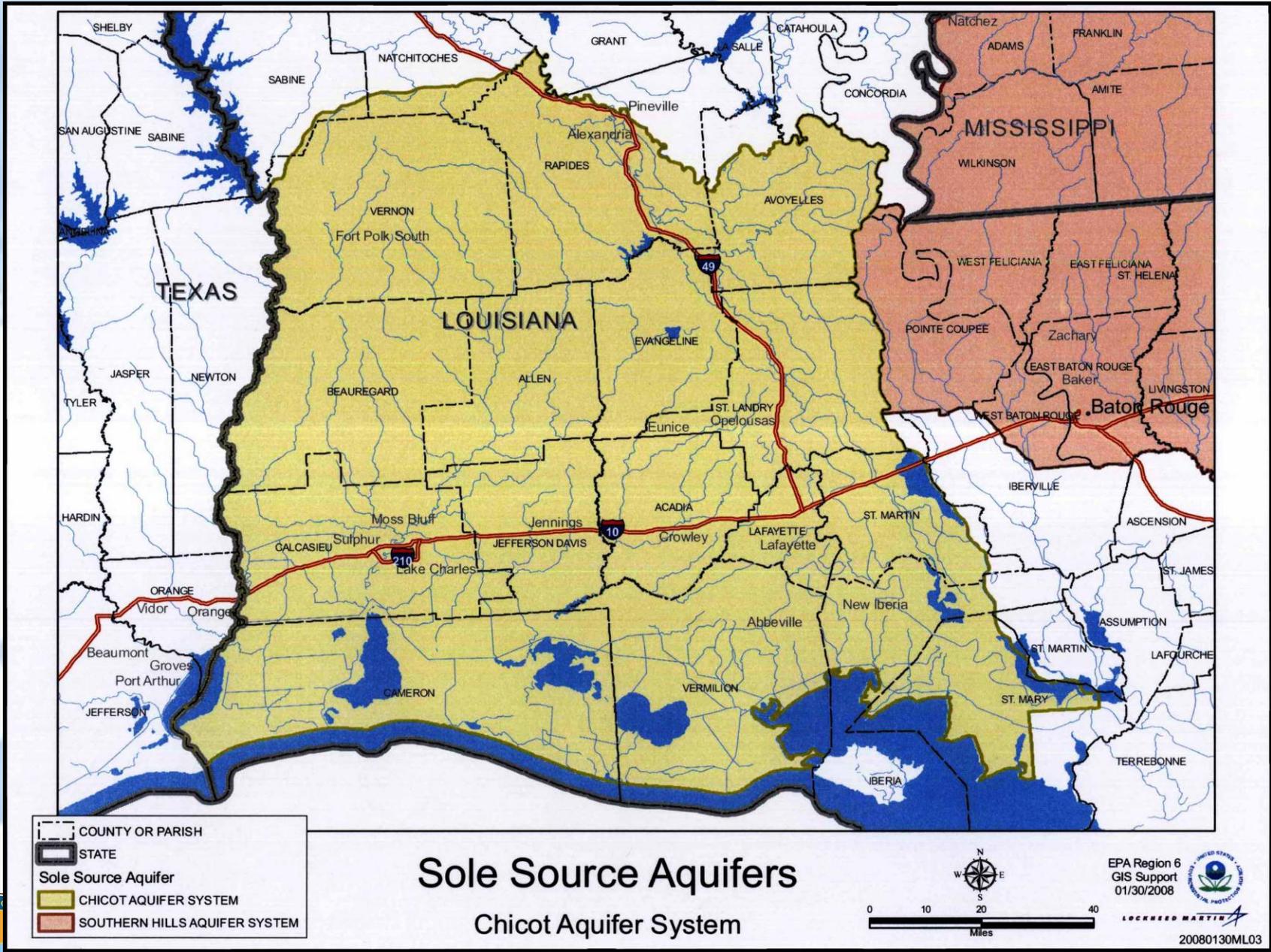
San Diego, CA

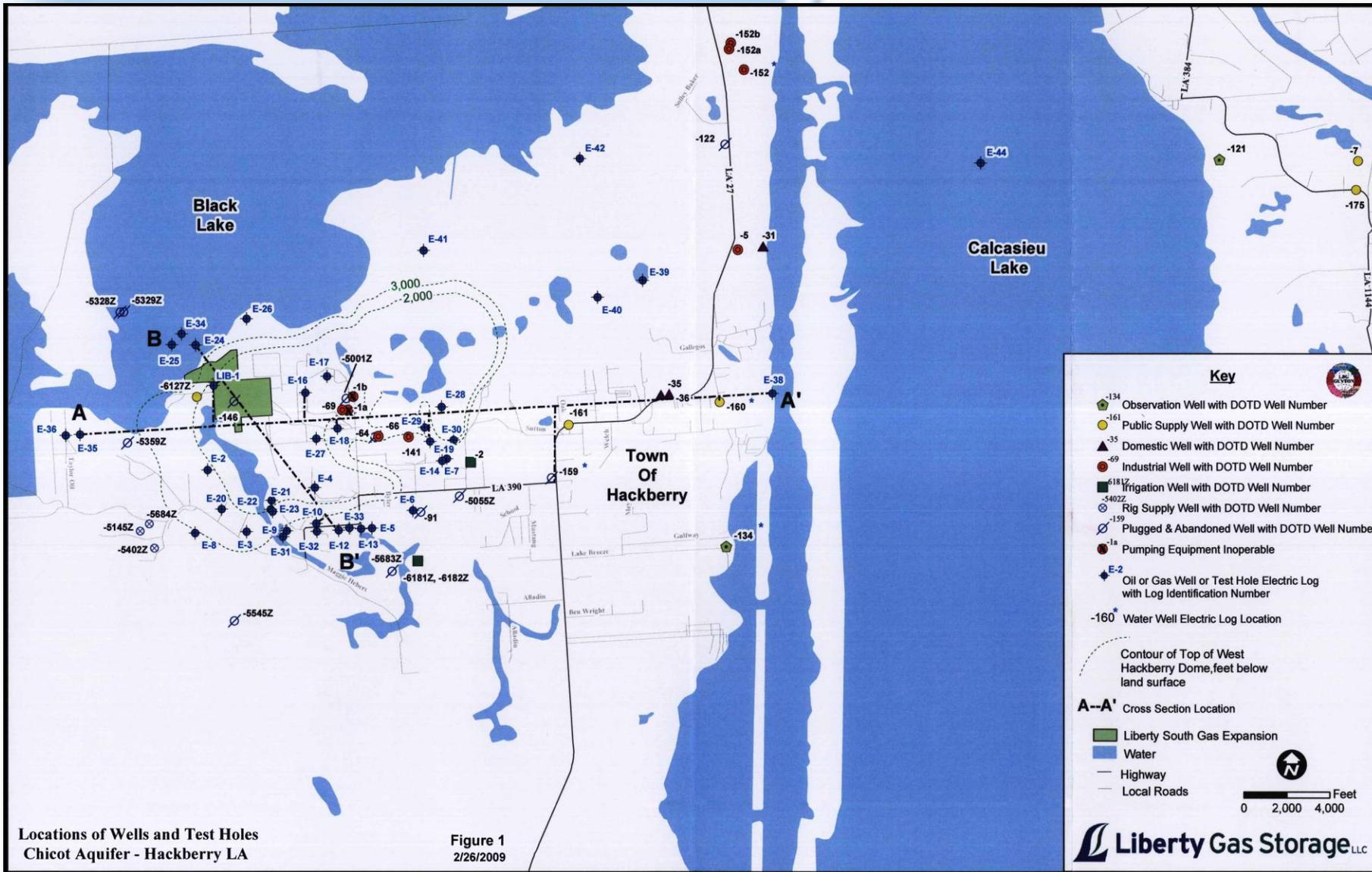
Prepared by

LBG-Guyton Associates
Professional Groundwater and Environmental Engineering Services
11111 Katy Freeway Suite 850
Houston, Texas 77079

February 26, 2009







Analysis of Groundwater Withdrawal Impacts on the Chicot Aquifer Liberty Gas Storage Expansion Cameron Parish, Louisiana

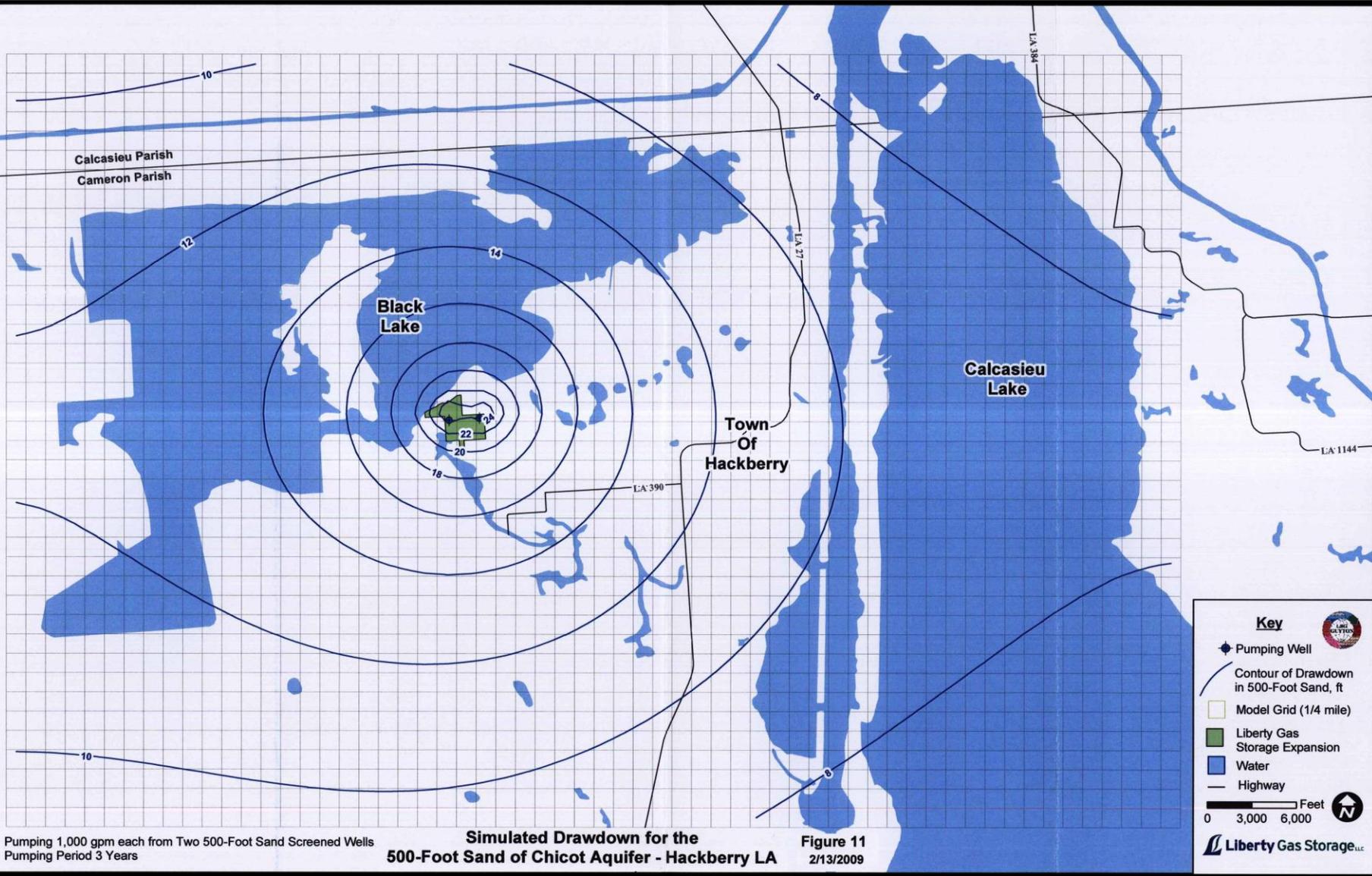
Executive Summary

Liberty Gas Storage submitted on July 31, 2008, Water Well Notification Forms for mining water wells to support the development of a natural gas storage cavern for the Liberty Gas Storage Expansion Project (LGSE) located in the west part of the West Hackberry Salt Dome. As shown in the Water Well Notification Forms, two or three water wells will be located in the 500-Foot Sand for a total pumping rate of 2,000 gpm (two wells are anticipated to provide this flow, with the third water well included as a contingency well). In addition, two or three water wells will be located in the 700-Foot Sand with a total pumping rate of 2,000 gpm. This approach, namely splitting the total required project flow between the 500-Foot Sand and 700-Foot Sand, was selected in recognition of concerns related to usage of water from the 500-Foot Sand, noting that water chemistry in the 700-Foot Sand is expected to be unacceptable, however, using water blended from the 500-Foot Sand and 700-Foot Sand should have adequate water chemistry. The pumping is planned to occur over a two or three year period.

This report provides the results of an LGSE study which has been performed to evaluate the impact of LGSE mining water wells on the Chicot aquifer, in particular with regard to salt water intrusion. The study includes the following elements:

- Reviewing previous geological and aquifer studies in the area.
- Mapping the 500-Foot Sand and 700-Foot Sand in the region of the LGSE Project site based on existing well logs.
- Compiling available historical data from existing wells in the area for water analyses, fluid levels, usage and mechanical information.
- Developing a two dimensional flow model, MODFLOW, (a USGS developed program for determining drawdown and water movement due to well pumping) to evaluate impacts of LGSE water well operation on the Chicot aquifer.





Pumping 1,000 gpm each from Two 500-Foot Sand Screened Wells
Pumping Period 3 Years

Simulated Drawdown for the
500-Foot Sand of Chicot Aquifer - Hackberry LA

Figure 11
2/13/2009



**Groundwater Quality Monitoring Plan
Liberty Gas Storage Expansion Project
Cameron Parish, Louisiana**

Objective

The objective of the groundwater monitoring plan is to monitor the Chicot Aquifer conditions in the Hackberry area as groundwater is pumped to support cavern development at the Liberty Gas Storage Expansion Project (LGSE). The monitoring plan includes collection and review of data, including available historical data, for both the 500- Foot and 700- Foot Sand zones. In addition, LGSE has an existing subsidence monitoring program which will be implemented to periodically monitor impacts of LGSE activities.

This **Monitoring Plan** consists of:

- Periodically monitoring several existing groundwater wells to track water well behavior and the Chicot aquifer water quality.
- Evaluating and reporting the data.

Methodology

- Periodic collection and subsequent water analyses. The constituents below are good indicators of water quality stability or change:
 - Chlorides.
 - Total dissolved solids.
 - Specific conductivity.
- Measuring static water levels of each of the monitoring wells, if available.
- Recording of relevant LGSE well water levels, flow rates and volumes.
- Implementation of the LGSE Subsidence Monitoring Plan.
- Data comparison using tables and graphs and subsequent evaluation.



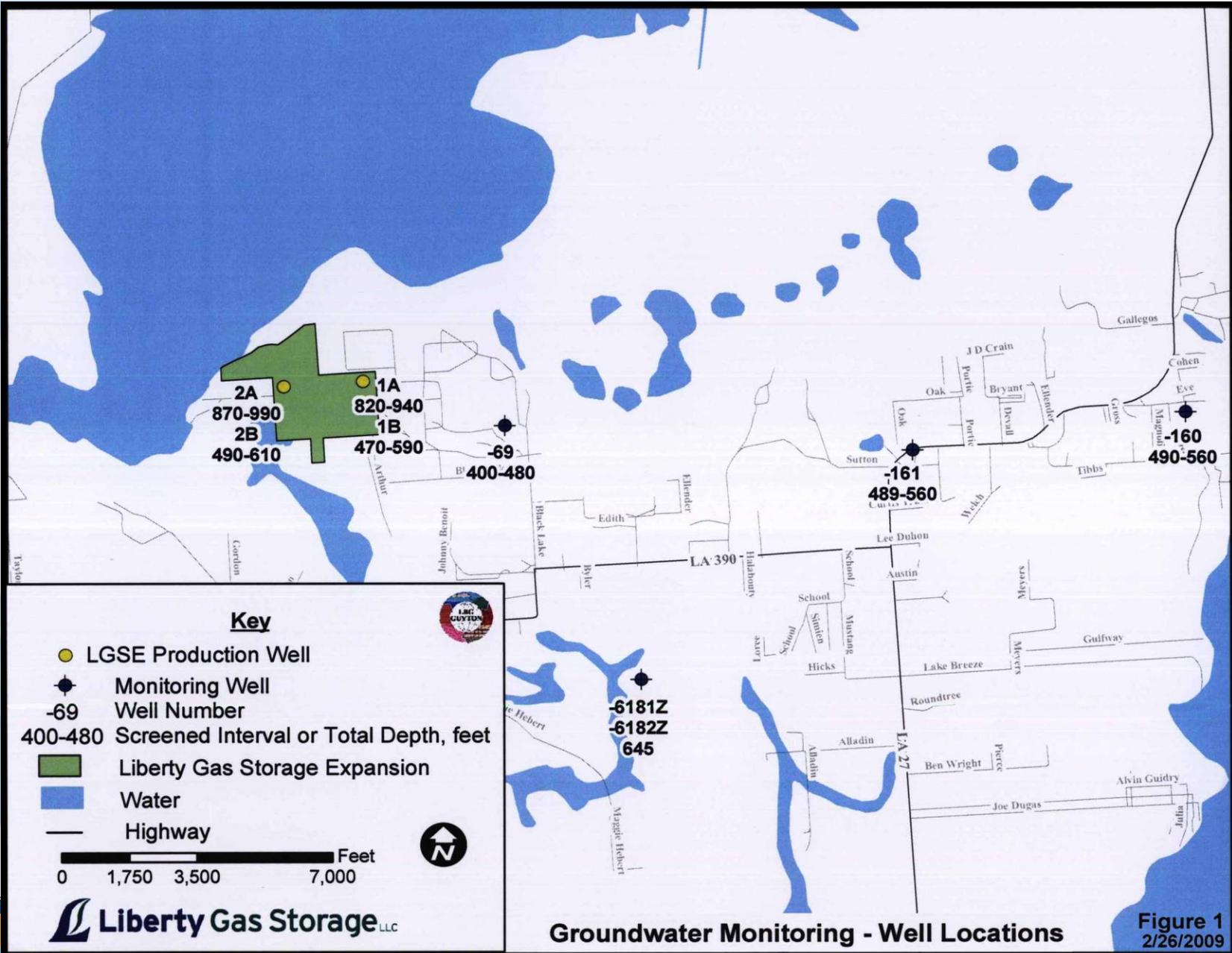


Figure 1
2/26/2009



**Mitigation Plan
Liberty Gas Storage Expansion Project
Cameron Parish, Louisiana**

Objective

The objective of the Groundwater Mitigation Plan is to determine if the activities of Liberty Gas Storage Expansion Project (LGSE) are the cause of anomalous groundwater well conditions in the 500-Foot and/or the 700-Foot Sands as determined by the Monitoring Plan. The Mitigation Plan outlines what actions will be taken, including cessation of pumping activities by LGSE, in response to water quality anomalies.

Action Steps

Conduct a step-wise investigation as follows:

- ◆ Affirm sampling locations for water quality data and graphical data.
- ◆ Verify analytical values and conditions with Sampling and Lab personnel.
- ◆ Review groundwater well conditions and if well pumping rates have changed.
- ◆ Look for correlations and anomalies and compare with current:
 - ◇ Groundwater pumping
 - By LGSE
 - By others
 - ◇ Well water quality, and water level data
 - ◇ Subsidence information

Should the above steps verify the existence of anomalous ground-water well conditions or significant ground-water quality changes the following steps should be taken.

- ◆ Initiate additional testing such as:
 - ◇ Resample wells from the locations showing anomalous data or trends.
 - ◇ Conduct pumping rate and drawdown testing at wells.
- ◆ Perform well diagnostics.

Should the Groundwater Quality Monitoring Plan indicate brackish water intrusion into the 500-Foot Sand is caused by LGSE activities, pumping by LGSE will cease pending the results of further investigation. The LDNR will be notified within 30 days of the intrusion. Included in the notification would be the circumstances and relevant analytical results.





BOBBY JINDAL
GOVERNOR

State of Louisiana
DEPARTMENT OF NATURAL RESOURCES
OFFICE OF CONSERVATION

March 23, 2009

SCOTT A. ANGELLE
SECRETARY

JAMES H. WELSH
COMMISSIONER OF CONSERVATION

Ms. Marilyn Teague
Permitting and Compliance Manager
Liberty Gas Storage, L.L.C.
101 Ash Street
San Diego, CA 92101

RE: Conservation Order No. ENV 2008-GW002
March 2009 Response Review
Ground Water Resources Well Numbers 12-0063 -12-0068
Industrial Wells – Pelican Water Well Nos. 001A – 003B
Cameron Parish

****SECOND SUPPLEMENT TO CONSERVATION ORDER NO. ENV 2008 – GW002****

Dear Ms. Teague:

This Supplemental Order is issued under the general authority of the Ground Water Resources Management Law, LSA-R.S. 38:3097.1 et seq, and under the specific authority set forth in Section 3097.3.C thereof and subject to LSA-R.S. 38:3097.3.F.

FINDINGS OF FACT

1) On November 19, 2008, the Office of Conservation (Conservation) issued Conservation Order No. ENV 2008 – GW002 to Liberty Gas Storage, LLC (Liberty) requesting additional information to complete evaluation of the referenced Water Well Notification Submittals, specifically to include “definitive, scientifically based documentation, or an acceptable operational plan, that clearly demonstrates that salt water encroachment will not adversely impact the fresh water sands of the Chicot aquifer system”.

2) With their March 2, 2009 report and March 23, 2009 report amendment (collectively hereafter referred to as “report”) provided in response to Order No. ENV 2008 – GW002, Liberty has demonstrated that the proposed Liberty Gas Storage Expansion Project (project) should not adversely impact ground water quality or aquifer sustainability as project plans include an acceptable a) monitoring program that will detect any increase in salinity in the groundwater of the 500-Foot and 700-Foot Sands, b) mitigation plan that includes cessation of pumping from the referenced water wells should an increase in salinity be identified and confirmed, and c) subsidence monitoring plan.

Environmental Division

Post Office Box 94275 • Baton Rouge, Louisiana 70804-9275 • 617 North 3rd Street • 9th Floor • Baton Rouge, Louisiana 70802
Phone (225) 342-8244 • Fax (225) 242-3505 • www.dnr.state.la.us/conservation

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Liberty Gas Storage, LLC
Second Supplement to Conservation Order No. ENV 2008 – GW002

Page 2 of 2
March 23, 2009

ORDER

Therefore, in order to preserve and manage ground water quality and aquifer sustainability in the area of the project, Liberty shall implement the plans included in their report as detailed in Finding of Fact 2 and provide quarterly, semi-annual, and annual monitoring, reporting and evaluations as described in the report and plans.

Any document(s) prepared in response to this Supplemental Order should be forwarded to Jeff Jones. Please reference the Order number (ENV 2008 – GW002).

If you have any questions concerning this Supplemental Order, you may contact Gary Snellgrove by phone at (225)342-7222 during normal office hours between 8:00 a.m. and 4:30 p.m., Monday through Friday, or by fax at (225)242-3505.

ISSUED THIS DATE PURSUANT TO LAW March 23, 2009.

James H. Welsh
Commissioner of Conservation

JHW:GWS;jtj



Ground Water Resources Program Update



Mr. Jeff Jones

DNR Office of Conservation

Statewide Ground Water Management Plan Development RFP and Timeline Update



Proposed Statewide Ground Water Conservation Plan

Months 1 & 2

RFP Advertisement, Receipt & Evaluation (ongoing)

Months 3-7

Award Contract
Research, Evaluate, Study,
Compile statistics, Identify best
management practices, Prioritize,
Outreach

Month 8

Issue Draft Comprehensive
Report and Receive Public
Comment

Months 9 - 11
**Publish FINAL
REPORT**

Timeline



Statewide Ground Water Conservation Plan

BOBBY JINDAL
GOVERNOR

SCOTT A. ANGELLE
SECRETARY

State of Louisiana
DEPARTMENT OF NATURAL RESOURCES
OFFICE OF MANAGEMENT AND FINANCE

October 19, 2009

MEMORANDUM

TO: Jeffrey Jones, Project Manager

FROM: Karen Y. Lewis *KYL*
Contracts & Grants Administrator

SUBJECT: RFP No. 2215-10-03
Title: "Statewide Ground Water Conservation Plan"

Please review the proposed RFP schedule and indicate any changes needed and/or your approval no later than October 20, 2009. The proposed schedule for the RFP process will be as follows:

DATE	PHASE	RESPONSIBILITY
10/28/09 11/4, 11/11/09	Begin advertising period (30 days)	Contracts & Grants Management Division (CGMD)
11/12/09	Deadline for written questions	CGMD/Project Manager
12/1/09	Proposal deadline Proposal Review	CGMD/Proposal Review Committee (PRC)
12/1/09	Submit evaluation and ranking report to Contracts & Grants Management Division	PRC
12/2/09	Notification of oral presentation (if any)	CGMD
12/7/09	Oral presentations	CGMD/PRC

Contracts and Grants Division
Post Office Box 94396 • Baton Rouge, Louisiana 70804-9396 • 617 North Third Street • 12th Floor • Baton Rouge, Louisiana 70802
(225) 342-4513 • Fax (225) 342-8700 • <http://www.dnr.state.la.us>
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Jeffrey Jones
October 19, 2009
Page Two

DATE	PHASE	RESPONSIBILITY
12/11/09	Recommendation to Secretary	CGMD
12/14/09	Notification of award	CGMD

Please sign below to indicate your approval of the schedule and to confirm your availability to review proposals within the scheduled time period. PRC members are not allowed to answer questions regarding the RFP or proposals received.

Your assistance given in this effort is sincerely appreciated.

Schedule Approved:

Jeffrey Jones
Jeffrey Jones, Project Manager

PROPOSAL REVIEW COMMITTEE

Bob Harper
Bob Harper, Undersecretary

Gary Snellgrove
Gary Snellgrove, Director

Gary Ross
Gary Ross, Assistant Commissioner

KYL/rh



Mr. Gary Snellgrove

DNR Office of Conservation

Katrina & Rita Water Well Damage Assessment

Haynesville Shale Frac Water Supply

Sparta Areas of GW Concern Monthly GW Use

**Statewide Water Well Notification Audit and
Enforcement**

Public Education and Outreach



Hurricanes Katrina & Rita

Water Well Damage Assessment

Parish	High	Moderate	Low
Calcasieu	3	8	132
Cameron	3	12	49
Iberia	1	2	75
Jefferson	0	0	0
Lafourche	0	0	10
Orleans	4	37	58
Plaquemines	0	0	3
St. Bernard	0	0	0
St. Charles	0	3	7
St. John the Baptist	0	1	5
St. Mary	0	8	25
St. Tammany	4	45	845
Tangipahoa	0	1	22
Terrebonne	0	2	9
Vermilion	5	35	468
Total	20	154	1708



Risk Status - HIGH

Risk Status - MODERATE

Parish	Domestic	Irrigation	Public Supply	Industrial / Other
Calcasieu	3	0	0	0
Cameron	3	0	0	0
Iberia	1	0	0	0
Jefferson	0	0	0	0
Lafourche	0	0	0	0
Orleans	4	0	0	0
Plaquemines	0	0	0	0
St. Bernard	0	0	0	0
St. Charles	0	0	0	0
St. John the Baptist	0	0	0	0
St. Mary	0	0	0	1
St. Tammany	3	0	0	0
Tangipahoa	0	0	0	0
Terrebonne	0	0	0	0
Vermilion	4	1	0	0
Total	18	1	0	1

Parish	Domestic	Irrigation	Public Supply	Industrial / Other
Calcasieu	7	1	0	0
Cameron	10	1	0	1
Iberia	2	0	0	0
Jefferson	0	0	0	0
Lafourche	0	0	0	0
Orleans	37	0	0	0
Plaquemines	0	0	0	0
St. Bernard	0	0	0	0
St. Charles	2	1	0	0
St. John the Baptist	1	0	0	0
St. Mary	8	0	0	0
St. Tammany	45	0	0	0
Tangipahoa	1	0	0	0
Terrebonne	0	2	0	0
Vermilion	32	3	0	0
Total	145	8	0	1



Risk Status - Low

Parish	Domestic	Irrigation	Public Supply	Industrial / Other
Calcasieu	119	13	0	0
Cameron	36	10	3	0
Iberia	64	9	2	0
Jefferson	0	0	0	0
Lafourche	1	9	0	0
Orleans	57	0	0	1
Plaquemines	3	0	0	0
St. Bernard	0	0	0	0
St. Charles	4	3	0	0
St. John the Baptist	5	0	0	0
St. Mary	23	1	1	0
St. Tammany	826	12	4	3
Tangipahoa	22	0	0	0
Terrebonne	2	6	0	1
Vermilion	350	111	3	4
Total	1512	174	13	9



Haynesville Shale Activity

- 1. Mandatory Drilling & Frac Water Supply Source and Volume Reporting**
- 2. Domestic Well Water Use For Non-Domestic Purposes**
- 3. Rule Amendment**



Haynesville Shale Frac Water

Mandatory Drilling & Frac Water Supply Source and Volume Reporting

Actions of the Commissioner:

1. Requires operators to report water sources and volumes
2. Issued on September 15, 2009
3. Enforceable effective October 1, 2009
4. Provides valuable ground water resource management tool



Haynesville Shale Frac Water

Mandatory Drilling & Frac Water Supply Source and Volume Reporting



State of Louisiana
DEPARTMENT OF NATURAL RESOURCES
OFFICE OF CONSERVATION
MEMORANDUM

BOBBY JINDAL
GOVERNOR

SCOTT A. ANGELLE
SECRETARY

JAMES H. WELSH
COMMISSIONER OF CONSERVATION

September 15, 2009

TO: All Concerned

**FROM: James H. Welsh
Commissioner of Conservation**

SUBJECT: Reporting Requirements for Water Use in E&P Operations

To promote effective groundwater resource management and to aid in the development of policies and regulations to protect these resources, it is the policy of this Office to require the reporting of information related to water use in drilling, completion, stimulation and workover operations.

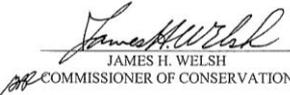
Specifically, the water source and associated volume must be reported on page two (2) of the 'Well History and Work Resume Report' (Form WH-1) which must be filed within twenty days after completion or recompletion operations. The water sources must be identified by either the water well number or water body name, as appropriate. Separate water volumes for rig supply use and stimulation operation use must be provided. A completed example of page two (2) of the 'Well History and Work Resume Report' (Form WH-1) is attached.

At this time, the policy shall only apply to wells for which a work permit is issued to conduct hydraulic fracturing stimulation operations.

A revised 'Well History and Work Resume Report' (Form WH-1) is available from the department web site at the following address: <http://dnr.louisiana.gov/cons/CONSEREN/documents/WH-1.doc>

The policy is effective immediately. Questions on implementation may be directed to Mr. Robert "Bob" Romero at (225) 342-8242 or robert.romero@la.gov.

OFFICE OF CONSERVATION
OF THE STATE OF LOUISIANA


JAMES H. WELSH
COMMISSIONER OF CONSERVATION

JHW:CS
Attachment

Post Office Box 94275 • Baton Rouge, Louisiana 70804-9275 • 617 North 3rd Street • 9th Floor • Baton Rouge, Louisiana 70802
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OFFICE OF CONSERVATION
WELL HISTORY AND WORK RESUME REPORT

FIELD _____

SERIAL NO. _____

PRODUCING INTERVAL _____

RESERVOIR COMPANY NAME (IDENTIFICATION) _____

This is a copy of the report to be filed with the Director of the Office of Conservation within 20 days of the date of completion. NOTE: If not properly completed and signed, the report will be void.

LEASE AND WELL DATA

CHECK APPROPRIATE BOXES 31 INACTIVE DRY HOLE/FUT. UTIL. PRODUCT IF RECOMPLETION DATE COMP. _____

For hydraulically fractured wells, list below all water sources and corresponding water volumes used in drilling, completion, stimulation and workover operations. (Direct questions to Mr. Robert Romero: (225) 342-8242)

GROUND WATER SOURCE WELL # (DOTD or DNR #)	OTHER WATER SOURCE (Name of surface water body, public supply, etc.)	DRILLING RIG SUPPLY VOLUME (gal)	STIMULATION VOLUME (gal) (hydraulic fracturing)	OTHER VOLUME (gal)
TOTAL GROUND WATER VOLUME USED (gal)				

List below all important Paleofaunal or Geological Formation tops, Cap Rock and Salt Overhang bottoms.

FORMATION	DEPTH	FORMATION	DEPTH

CERTIFICATE: I, the undersigned, state that I am employed by _____ and that I am authorized to make this report, and that this report was prepared under my supervision and direction and that all facts stated herein are true, correct and complete to the best of my knowledge.

Signature: _____ Title: _____

*Date well is capable of producing, drilling to or within 100 feet of completion, etc. See well log for details.
FORM WH-1 (04/09)



October 13, 2009

Water source reporting required of oil and gas operators

By Vickie Welborn
vwelborn@gannett.com

Effective this month, the state conservation office will enforce a new requirement for reporting water sources utilized by oil and gas companies for hydraulic fracturing operations.

The policy is in response to the intense development of the Haynesville Shale natural gas formation in northwest Louisiana. The reporting requirement is part of the Office of Conservation's efforts to ensure the balance between preserving the state's natural resources while allowing responsible development, Commissioner James Welsh said.

"We want to make sure we have the best information possible on how our resources are being used to help us make the best policy decisions in regulating industry and protecting the public now and in the future," Welsh said in a prepared statement.

Water quickly emerged as a primary concern in conjunction with the Haynesville Shale development explosion, as area residents feared competition with the delicate aquifers that are major private water suppliers. Approximately 3 million to 4 million gallons of water are needed per well to fracture the underground formation so the natural gas can be extracted.

A big push has been under way for months to shift the oil and gas companies to surface water sources. And officials involved with water conservation efforts believe the overall attention to the water worries is working. A majority of the companies are utilizing water sources such as rivers, lakes and ponds.

The industry, Welsh said, already is responding to the new reporting requirement — made enforceable Oct. 1 — that calls for either the water well number or water body name from which their water is drawn to be identified. Volumes of water used also must be cited.

"While we already have procedures in place to track the number and use of water wells in the state, increasing the amount of data available to the Office of Conservation's Ground Water Resources Program increases the ability to appropriately manage resources," said state Department of Natural Resources Secretary Scott Angelle, who also chairs the state Ground Water Resources Commission.

The Ground Water Resources Program, within the Office of Conservation, has started work on collecting the information received through the new reporting requirement and is preparing methods of analysis to make the best use of the data.

Along those lines, a separate effort is being initiated in Bossier, Caddo and DeSoto parishes to study any impact drilling and hydrofracturing will have on potable water sources. The LSUS Red River Watershed Management Institute and LSUS Louisiana Geological Survey have proposed a two-year examination of 1,000 to 1,200 domestic wells in the southern half of Caddo, southern third of Bossier

and northern half of DeSoto parishes that are in the heart of the drilling activity.

The proposal, which comes with a \$250,000 price tag split among the three parishes, calls for samples to be taken of the wells at no costs to the citizens after permission is given for access. Water levels and quality would be studied, and the results will be shared with well owners.

Attention would be paid to wells mainly completed in the Carrizo-Wilcox and Red River Alluvial aquifers and some samples from the Sparta and Upland Terrance aquifers. Samples will be analyzed for 26 chemicals. The last study that considered water quality in northwest Louisiana was in the early 1990s.

Gary Hanson, executive director for the institute, made the pitch Monday night to the DeSoto Parish Police Jury. Contact already has been made with Caddo and Bossier governing officials. None have signed off on the project but interest has been expressed. Most are considering the idea in the 2010 budgeting process.

Additional Facts

Learn more

More information on the Louisiana Office of Conservation's new reporting requirement can be found at www.dnr.louisiana.gov.



November 10, 2009

State seeks compliance with domestic water well usage

By Vickie Welborn
vwelborn@gannett.com

State officials are asking oil and gas operators to help ensure that water drawn from domestic wells is not being used for industrial purposes, particularly in the hydraulic fracturing of natural gas wells.

The Louisiana Department of Natural Resources' Office of Conservation has issued a memo to operators that coincides with guidance Commissioner James Welsh gave his Environmental Division, reminding the public that proper state notification is required if domestic well water is used for any purpose other than what is defined by state law that states a "domestic well shall mean a water well used exclusively to supply the household needs of the owner, lessee, or his family."

The guidance statement and memo are part of the conservation office's continuing response to concerns and potential issues involving water use for drilling operations requiring hydraulic fracturing, or "fracing."

"We want to make sure well owners and oil and gas operators clearly understand the rules regarding water use," Welsh said Monday in a news release.

DeSoto Waterworks District No. 1 Administrator John Neilson is pleased to see the state is taking the issue seriously.

He has long suspected some violations could be taking place in DeSoto Parish, which is in the heart of the Haynesville Shale activity.

"I think it's a real positive step in the right direction. I'm glad to see some response from them," Neilson said.

"They've got to be sensitive to the needs of the industry as well as us."

Two months ago, Neilson met in Mansfield with natural resources Secretary Scott Angelle and reviewed concerns. Neilson on Monday received a letter from Angelle, who said he planned to send an investigator to look at specific areas.

Earlier this year, state officials found at least one violation in DeSoto Parish.

But when the well owner and oil and gas operator were informed of the law, both stopped the practice, communications director Patrick Courreges said Monday.

And an area around Grand Cane and Longstreet also was checked. Letters were sent to all domestic well owners.

No violations were uncovered.

"Folks have been pretty good once we tell the ground rules. "» We just want to make sure they are aware of them," he added.

The guidance statement and the memo to oil and gas operators referencing the statement informs domestic water well owners that they must provide the conservation office with a 60-day notice before using groundwater for a non-domestic purpose.

"This is part of our comprehensive effort to ensure we get the best data possible on ground water use.

Accurate information is the foundation of appropriate management of our ground water resources," said Angelle, who also chairs the state Ground Water Resources Commission, in a news release.

Domestic well owners who fail to give proper notification may face a compliance order and civil penalties from the state.

"State laws on groundwater use are designed to protect the integrity and availability of our drinking water," said Patrick Credeur, executive director of the Louisiana Rural Water Association.

"We believe that informing the public on the proper use of water from domestic wells is important in serving that vital mission."



Haynesville Shale Frac Water

Rule Amendment

1. Provides temporary waste fluids used as frac water supply
2. Final rule effective November 20, 2009



Louisiana.gov > Department of Natural Resources

News Release

State Office of Conservation developing new rules to cut demand on fresh water for drilling activity

For Release:
July 23, 2009

Update:
August 28, 2009

The Louisiana Office of Conservation is developing new rules allowing for the limited re-use of waste water from oil and natural gas exploration and production operations for drilling operations in the Haynesville Shale area.

The proposed new rules would allow, with certain limitations, the one-time use of such waste water for the process known as hydraulic fracturing, or "fracing," in the Haynesville Shale natural gas formation.

The "fracing" process involves using water to fracture a shale formation and allow for natural gas to be extracted. Use of this process is a major component of recent exploration operations in the area of northwest Louisiana lying over the Haynesville Shale natural gas formation.

The purpose of the proposed change is to help conserve freshwater aquifer resources by allowing the use of exploration and production waste water to be used to perform the hydraulic fracturing operations in the Haynesville Shale formation.

State Commissioner of Conservation James Welsh said that the intense development of the Haynesville Shale natural gas formation calls for innovative ideas in the management of water resources.

"The amendments we are proposing use sound waste minimization principles, along with conservative waste management requirements to promote ground water resource management and conservation, while protecting public health and the environment," Welsh said.

"This proposed change represents sound public policy, based in good science, in preserving one of our most precious natural resources – ground water – while still allowing responsible development of another resource – natural gas that helps fuel our nation," said state Department of Natural Resources Secretary Scott Angelle, who also chairs the state Ground Water Resources Commission.

Limitations proposed include:

- The waste water can only be used for hydraulic fracturing in the Haynesville Shale
- The waste water can only be used by the same operator of record
- The waste water can only be used to complete hydraulic fracturing operations on one well before being disposed of
- All waste generated in the processing of the waste water for fracturing fluid must be properly disposed of
- The surface owner must register no objection on the well site receiving the waste water



Sparta Areas of Ground Water Concern

Monthly Ground Water Use Update

- 1. All active registered water wells reporting**
- 2. Database completed**
- 3. QA/QC Review Complete**
- 4. Industry ground water conservation initiative – Flakeboard Company, Limited**



Statewide Well Notification Audit and Enforcement

Initiated a comprehensive statewide audit schedule

- Two year plan to audit all ground water wells drilled in Louisiana after January 1, 2001
- To date, 18 parishes audited
- Current status of implementation

2009 Schedule

January	February	March	April	May	June	July	August	September	October	November	December	
Caddo, Red River, Bossier, DeSoto					Calcasieu, Cameron	Jeff Davis, Vermillion	Acadia, Lafayette	Allen, Evangeline, St. Landry	Bienville, Webster	Claiborne, Jackson, Lincoln	Ouachita, Morehouse, Union	
CARIZZO – WILCOX (Haynesville)					CHICOT				SPARTA			



Statewide Well Notification Audit and Enforcement

Comprehensive statewide audit schedule continued...

2010 Schedule

January	February	March	April	May	June	July	August	September	October	November	December
EBR, E. Feliciana, WBR, W. Feliciana	Livingston, St. Helena, Tangipahoa, Washington	St. Tammany	E. Carroll, Madison, Richland, W. Carroll	Catahoula, Concordia, Franklin, Tensas	Caldwell, Grant, LaSalle, Natchitoches, Sabine, Winn	Beauregard, Vernon	Avoyelles, Pointe Coupee, Rapides	Assumption, Iberia, Iberville, St. Martin, St. Mary	Ascension, St. Charles, St. James, St. John	Jefferson, Lafourche, Terrebonne	Orleans, Plaquemines St. Bernard
SOUTHEAST LOUISIANA			MS RIVER ALLUVIAL		OTHER						

Annual Statewide Schedule - Beginning 2011 and proceeding annually

January	February	March	April	May	June	July	August	September	October	November	December
Bienville, Bossier, Caddo, Desoto, Red River, Webster	Claiborne, Jackson, Lincoln, Morehouse, Ouachita, Union	Acadia, Calcasieu, Cameron, Jeff Davis, Vermillion	Allen, Beauregard, Evangeline, Lafayette, St. Landry	EBR, E. Feliciana, Livingston, St. Helena, WBR, W. Feliciana	E. Carroll, Franklin, Madison, Richland, Tensas, W. Carroll	Caldwell, Grant, LaSalle, Natchitoches, Sabine, Winn	Avoyelles, Catahoula, Concordia, Rapides, Vernon	Assumption, Iberia, Iberville, Pointe Coupee, St. Martin	Ascension, St. Charles, St. James, St. John, Tangipahoa, Washington	Orleans, St. Tammany	Jefferson, Lafourche, Plaquemines, St. Bernard, St. Mary, Terrebonne



Public Outreach and Education

Public Supply Well Owner Campaign

1. 1,299 letters have now been mailed
2. To date, ALL public supply owners should have received a letter informing them of the compliance auditing procedures



BOBBY JINDAL
GOVERNOR

State of Louisiana
DEPARTMENT OF NATURAL RESOURCES
OFFICE OF CONSERVATION

SCOTT A. ANGELLE
SECRETARY
JAMES H. WELSH
COMMISSIONER OF CONSERVATION

MEMORANDUM

To: Non-Community Public Supply Ground Water Well Owners

From: James H. Welsh
Commissioner of Conservation *JHW*

Date: November 3, 2009

Subject: Office of Conservation Statewide Compliance Audit for Water Well Notification Requirements

This memorandum is provided to inform non-community public supply water well owners of our statewide water well notification compliance audit that is currently being conducted on a parish by parish basis by the Louisiana Office of Conservation (Conservation). Since July 1, 2001 to present, Louisiana statutory law, and subsequently promulgated regulations, require that water well owners of all public supply water wells installed in the state on or after July 1, 2001 notify Conservation at least 60 days prior to completing installation of such wells. LSA-R.S. 38:3097.1 et seq. and LAC 43:VI.701.B. Consequently, failure on the part of water well owners to meet these water well notification requirements is a violation of statutory law and agency regulations, and is an enforceable violation with possible issuance of a compliance order and assessment of civil penalty pursuant to LSA-R.S. 38:3097.3(F).

If you are currently the owner of a public supply water well that was installed after July 1, 2001 that has not been properly registered as plugged and abandoned with the Department of Transportation and Development (DOTD) and you have not provided a water well notification form to Conservation, you are hereby encouraged to provide such notification to our agency at your earliest opportunity. No enforcement action may be necessary should our agency receive a properly completed water well notification form for a well prior to its identification as being delinquent. It is therefore recommended that you take immediate action to resolve any non-compliance with our agency regulations by reviewing your Conservation water well notification and DOTD water well registration records.

All water well notification forms must be properly completed and submitted by mail, e-mail, or fax to the Office of Conservation. Contact information is provided below. To obtain a copy of the form, contact Ground Water Resources Program staff at 225-342-8244 or download the form at <http://dnr.louisiana.gov/CONS/gwater/GWR-01R1.pdf>.

Mail: Louisiana Office of Conservation
Environmental Division
Ground Water Resources Section
P.O. Box 94275
Baton Rouge, LA 70804-9275

E-mail: gwater@la.gov **Fax:** (225) 342-5529

Environmental Division
Post Office Box 94275 • Baton Rouge, Louisiana 70804-9275 • 617 North 3rd Street • 9th Floor • Baton Rouge, Louisiana 70802
Phone (225) 342-8244 • Fax (225) 242-3505 • www.dnr.state.la.us/conservation
An Equal Opportunity Employer



Public Outreach and Education

Agriculture Agency Education Campaign

1. NRCS District Engineering Staff Meeting Environmental Division

- a. October 28th in Alexandria, Louisiana
- b. Educated staff on DNR statutory authority, water well notification requirements and evaluation procedure.

2. LSU Ag Center staff education

- a. Contact made
- b. Gained interest
- c. Committed to meet next 6 months



Water Well Notification Flow Charts

Flow Charts are available to water well owners as a helpful tool.

1. Agriculture Irrigation*
2. Public Supply
3. Industrial

Is the well replacing an existing well?

Yes

No

Is the new well screened at the same interval and in the same aquifer, has the same pumping rate, purpose and is within 1000 ft of the well it's replacing?

No

Is the well located in an area currently classified as in a drought by the U.S. Drought Monitor, Governor or State Climatologist?

Yes

Yes

No

Install the well and provide a 60 day post notification to the Office of Conservation

Provide 60 day advance notice to the Office of Conservation before you install the well.



Public Outreach and Education

Water Well Notification Email Distribution

1. Provides email notice to 64 parish contacts and other interested parties
 - a. 1st email received upon receipt
 - b. 2nd email received upon approval

Page 1 of 1

From: GWD@LA.GOV
Sent: Wednesday, November 04, 2009 8:48 AM
To: Maureen Dippel
Subject: APPROVAL for Water Well Permit - Frac Water Supply - well #: 07-0093

Follow Up Flag: Follow up
Flag Status: Flagged



Date Entered: 11/04/2009
Well Number: 07-0093
Owner: Bobby StarkXTO Energy, Inc.
Driller: KEITHVILLE WELL DRILLING & SERVICES, INC.
Anticipated Completion Date: 2009/12/05 00:00:00

[Click here for full details on the water well.](#)

[Please use the link below to no longer receive e-mails about water wells notifications.](#)

file://FAUSERS\MAUREEND\Maureen File\Conservation\Groundwater\GW Meeting December 2, 200... 11/10/2009



Mr. John Adams

DNR Office of Conservation

Act 437 Memorandum of Understanding – Transfer of Authority for Well Drillers



Act 437 – Regular Session 2009

1. Transfers water well driller program from DOTD to DNR
 - a. Drillers licensing and regulations program
 - b. Registration program
 - c. Enforcement program
2. Memorandum of Understanding (MOU) due January 1, 2010
3. Authorizes Commissioner enforcement authority
4. Status update

BOBBY JINDAL
GOVERNOR



State of Louisiana
DEPARTMENT OF NATURAL RESOURCES
OFFICE OF THE SECRETARY

October 21, 2009

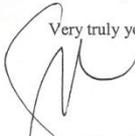
Dr. William D. Ankner, Secretary
Louisiana Department of Transportation and Development
Office of the Secretary
P.O. Box 94245
Baton Rouge, Louisiana 70804-9245

RE: Act 437 Memorandum of Understanding pertaining to Water

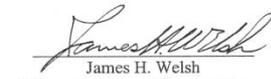
Dear Secretary Ankner:

We are in receipt of your suggested modifications to The Memorandum of Understanding between the Department of Transportation and Development and the Department of Natural Resources relative to the transfer of responsibilities and water well drillers. Attached is an updated memo in which we have incorporated your modifications. I believe it is time to arrange a meeting to work out the details that let us know when you may be available.

Very truly yours,



Scott A. Angelle
Secretary, LDNR



James H. Welsh
Commissioner of Conservation

SAA:JHW:JWA:jwa
Enclosure

Post Office Box 94396 • Baton Rouge, Louisiana 70804-9396
617 North Third Street • 12th Floor • Suite 1240 • Baton Rouge, Louisiana 70802
(225) 342-2710 • Fax (225) 342-5861 • <http://www.dnr.state.la.us>

MEMORANDUM OF UNDERSTANDING
BETWEEN
LOUISIANA DEPARTMENT OF NATURAL RESOURCES
OFFICE OF THE SECRETARY;
LOUISIANA DEPARTMENT OF NATURAL RESOURCES
OFFICE OF CONSERVATION
(Cumulatively hereinafter referred to as the "DNR")
AND
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
OFFICE OF THE SECRETARY
(Hereinafter referred to as the "DOTD")

WHEREAS, Section 3 of Act Number 437 passed in the Regular Session of the Louisiana Legislature, 2009 requires the secretary of the Department of Transportation and Development and the secretary of the Department of Natural Resources and the commissioner of conservation to enter into a Memorandum of Understanding setting forth the timing and manner of the transition of the responsibilities relating to water wells and water well drillers from the Department of Transportation and Development, office of public works, to the Department of Natural Resources, office of conservation;

NOW, THEREFORE, BE IT RESOLVED that, in order to comply with Section 3 of Act Number 437 of the Regular Session of the Louisiana Legislature, 2009, the Department of Transportation and Development, the Department of Natural Resources and commissioner of conservation hereby enter into this Memorandum of Understanding and agree to the following:



Next Meeting Date

Wednesday, February 3, 2010

11:00 AM

Location TBA

